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VOL. II.—42ND YEAR

SYDNEY, SATURDAY, DECEMBER 3, 1955

No. 28

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# THE MEDICAL JOURNAL OF AUSTRALIA

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<b>MORBIDITY AFTER SUPRAPUBLIC PROSTATECTOMY.<sup>1</sup></b>		
By RICHARD G. S. HARRIS, Sydney.		
<b>IN 1927</b> when Harry Harris presented his operation of "Suprapubic Prostatectomy with Closure", he stated: "It brings suprapubic prostatectomy into line with modern operative procedures and may fairly be described as an operation of precision." Also: "The operation demands a nice clean intracapsular removal of the prostate. No method of covering up the prostatic bed will compensate for any shortcomings in this regard."		
Most surgeons who have mastered the described technique have continued the practice of the operation over the years to their complete satisfaction, in regard both to the extremely low mortality rate and to the relative freedom from morbidity. Harris's claims have been fully justified.		
With the introduction of control of haemorrhage by suture, and with the plastic repair of the prostatic cavity, this operation permitted for the first time primary closure of the bladder and drainage by urethral catheter alone. Primary closure, whilst not an essential, is an		
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integral part of the operation, and is the goal to be aimed at, but should not be attempted until confidence in the mastery of the technique has been attained, and the adequate training and efficiency of the nursing staff are assured. This cooperation is of great importance, as successful results in this, as in other methods of prostatic surgery, are so dependent on watchful and competent nursing, especially in the early post-operative period. Further, this cooperation I have found to be accorded willingly, when the ease of nursing and the comfort of the patient are fully appreciated.

As the details of the Harris operation play so great a part in reducing mortality and morbidity, I propose to refresh your minds of the essential details, and to point to their relationship to the subject of this symposium.

Briefly these are: the pre-operative treatment and avoidance of unnecessary opening of tissue planes; high cystotomy at the fundus of the bladder, in both the one and the two stage operation; the bimanual intraurethral method of enucleation (Bentley Squier); the adequate exposure and visualization by means of the specially lighted retractors; the positive control of haemorrhage by sutures inserted with the needle-sharp but blunt edged boomerang needles, modified from Young's; the elimination and prevention of bladder neck obstruction by the retrigonalization suture; the plastic reformation of the prostatic cavity by anterior sutures, which also complete the haemostasis; the valvular closure and inversion of the bladder incision, of

<sup>1</sup>Part of a symposium on "Morbidity following Prostatic Surgery", held at the annual meeting of the Urological Society of Australasia, Melbourne, on March 7, 1955.

the prevesical space and of the lower end of the recti, by a single extended figure of eight suture; and the positive anchorage of the urethral catheter by means of the nylon suture, tied on to a glass rod lying on the abdomen.

I would again repeat the warning that "a nice clean intracapsular removal of the prostate is demanded".

In my hands and in those of my associates, the Harris operation, or the companion operation of "block excision of the posterior vesical lip", has been found to cope with most of the pathological conditions requiring surgery. Endoscopic resection has been restricted more and more, and, at the present time, is reserved for carcinoma, bladder neck fibrosis, small fibroadenoma, and for the bad cardiac risk, when a minimal clearance of the bladder neck will give adequate symptomatic relief.

As my experience of other methods of retropubic and transvesical operations has been limited, I will confine my remarks to the Harris operation. The mortality and morbidity rate is of an extremely low order, and, without any undue complacency, I feel that it is close to the irreducible minimum, when consideration is given to the average "high age" group with which we deal.

Let me repeat again that adherence to the standard technique, without so-called improvements or modifications, is the only way in which these results can be maintained. This has been exemplified by the success achieved by some of the younger urologists in Sydney, who have been entirely converted from other methods of prostatectomy, and are now enthusiastic advocates of the Harris operation.

Except on rare occasions, I cannot subscribe to immediate prostatectomy. When I first commenced to practise urology, the importance of pre-operative treatment had not been appreciated—both mortality and morbidity were appallingly high. There is not the slightest doubt that the great measure of improvement achieved was due to the introduction of adequate treatment in hospital, as a prelude to operative interference.

Physical investigation and the necessary medical treatment are undertaken by a physician as soon as practicable after the patient's admission to hospital. Inlying catheter drainage, where indicated, ensures regeneration and stabilization of renal function, with improvement in the cardiac state and in mental stability. In other words, the optimum time can be chosen, and the operation becomes one of election and not one of emergency.

A closed system of drainage, with careful asepsis in the handling and introduction of the catheter, is the only satisfactory method of combating infection. The catheter selected should be only large enough to secure efficient drainage. Acidity of the urine is maintained at all times. Antibiotics should not be used as a routine; they should be used only when definite indications are presented and then after control sensitivity tests have been carried out.

The catheter is removed and replaced every fourth day. A shower or plunge bath and a walk are enjoyed during this brief recess. After the first few days of drainage, sitting up in a chair, preferably in the open air, is encouraged, the closed drainage system at the same time being maintained. Short walks may be taken with the catheter end plugged into a small sterile bottle. In this way circulatory stasis is avoided and morale is boosted.

Incisional hernia is rarely seen, as the small suprapubic incision does not favour its occurrence. Wound infection is reduced to a minimum by careful handling and by the avoidance of wide and unnecessary exposure of tissue planes.

The high opening in the fundus of the bladder, and the valvular method of closure by the extended figure of eight suture, make urinary fistula rare. *Osteitis pubis* has been conspicuous by its absence.

Adequate visualization of the prostatic cavity, obtained through the small incision by means of the special retractors, and positive haemostasis by sutures as well as the plastic reconstruction, mean relative freedom from reactionary and secondary hemorrhage from infection.

Efficient retrigonalization is an absolute preventive to post-operative bladder neck obstruction. That this fleshy

tongue of muscular and mucosal tissue remains in position after the absorption of the suture has been observed and proved on many occasions by subsequent endoscopic examination.

I agree with Caine's statement in his recent article that contracture of the outlet may occur if only a narrow wedge is excised from the posterior vesical lip. The additional lateral undercutting of the margins, as described in the block excision operation, may overcome this.

Obstruction from gross hypertrophy of the interureteric ridge is dealt with, when occasion demands, by excision and suture.

A protuberant abdomen and a deep pelvis have at times prevented the adequate completion of the plastic part of the operation, and it is only in these cases that post-operative obstruction has occurred.

I have only once seen an "iris diaphragm" due to the technical error of too tight closure of the cavity. I think it important that the tip of the index finger can be inserted through the rim of the cavity after the anterior sutures have been tied.

Late recurrence of obstruction is, I am sure, generally due to an incomplete and ragged enucleation. By the adoption of the bimanual intraurethral method, the plane of cleavage is easily found and retained, outlying nodules embedded in the false capsule can be felt and removed, and nodules occurring in the anterior commissure cannot be overlooked.

During the post-operative stage (and this applies to all prostatic surgery), careful nursing with a properly trained staff is essential, especially in the first twenty-four hour period. Continuity of drainage must be maintained, if necessary by repeated syringing of the catheter with a few ounces of a one in 3000 solution of silver nitrate; one must always be certain that the full quantity put into the bladder is returned. No routine lavage is permitted, as I feel sure that this prolongs or may initiate bleeding by opening vessels that have become sealed off. A similar operation is taken to citrate solutions.

Unless an unusually large amount of blood is lost at operation or by subsequent prolonged slight oozing—and this is uncommon with "a nice clean enucleation"—or unless there is some other definite indication, blood transfusion is not given. I deplore the routine use of transfusions, which I think is a confession of poor surgical technique.

Pulmonary and circulatory complications are rarities. Adequate pre-operative treatment as mentioned above, efficient anaesthesia with selection of the most suitable type of anaesthetic agent, early movements and breathing exercises are all of assistance. The last-mentioned are facilitated by the use of the small abdominal incision and by the absence of suprapubic drainage.

Suprapubic leakage of urine has rarely proved troublesome and has responded rapidly to the reinsertion of the urethral catheter for a short time.

Persistent fistula, which I have not encountered, can be due only to failure to remove all obstruction. Excision of the sinus and wound repair are generally a waste of time, and appear to me to be futile.

Urinary continence is the rule from the time of removal of the catheter on the seventh or eighth day after operation. The loss of a few drops of urine, under stress conditions, responds excellently to exercises of the perineal and levator muscles.

Reeducation of the bladder may be necessary at times to increase the capacity and to reduce frequency. Perseverance for a few weeks works wonders. I am not unduly concerned with the macroscopic appearance of the urine—apart from blood—until the elapse of a period of from four to five weeks after operation. Acidity is maintained at all times, but if turbidity persists, "sulpha" drugs are given and are effective rapidly, as healing over of the prostatic cavity takes place.

A urinary output of between three and four pints per day is aimed at in both the pre-operative and immediate

post-operative periods and generally for a month or so after. A greater diuresis may result in cardiac and renal embarrassment.

Epididymitis, despite the performance of vas section at the time of operation (and this greatly reduces the incidence), is still a worrying complication. In the pre-operative drainage period it may be an indication for preliminary cystostomy and two-stage operation. The ideal would be to perform vas section prior to any instrumentation, but this is rarely practicable for psychological and social reasons. Suppurative epididymo-orchitis is fortunately rare.

Vesical calculi have occurred, from months to years after operation. A review has shown that prostatic calculi were frequently noted at operation, or that vesical calculi had been present and removed.

Owing to faulty technique, I have seen, each on one occasion, urethro-rectal and scrotal urinary fistulae.

Urethral stricture at the bulb, very rarely at the meatus, has followed difficulty in insertion of the urethral catheter and consequent trauma. Passage of sounds has been the remedy.

In general, mortality and morbidity may to a large extent be reduced by a careful selection of the operation most suited to the condition found and to the physical make-up of the patient. To some extent, this choice will depend on the personal keenness of the surgeon for some particular operation and on his ability to master the technical details. The demands of the patient should be given only secondary and minor consideration and should never be allowed to influence judgement. Preliminary cystostomy, which appears to some extent to have gone into the discard, can be life-saving in the presence of acute infection and in poor cardiac or renal risks. Completion of the second stage operation can be performed after an elapse of weeks or months in relative safety. I have found that the comfort of cystostomy is in inverse proportion to the size of the drainage tube employed. This tube should be removed, cleaned and replaced at frequent and reasonably short intervals. After nearly thirty years' experience of the Harris operation of "suprapubic prostatectomy with closure" and of the companion operation of "block excision of the posterior vesical lip", I am satisfied with their wide application, which can cover successfully most of the field of surgical prostatic pathological conditions, and of their superiority for routine use.

The Harris operation is not one for the occasional prostatectomist—it is a specialist's operation, and as such I commend it to you, fully confident that you, too, will find it "an operation of precision". Whilst this review of morbid processes is not, perhaps, complete, it has, I think, given a fairly comprehensive cover. If at times I have appeared dogmatic or even provocative, it is with the hope that discussion may be stimulated.

#### MORBIDITY AFTER PROSTATECTOMY BY TRANSURETHRAL RESECTION.<sup>1</sup>

By HENRY MORTENSEN,  
*Melbourne.*

THE SUBJECT of morbidity following transurethral resection may be considered in two sections. The first group will include the various untoward events that may happen after any form of prostatectomy, such as haemorrhage, infection and kidney failure; the various complications, which have been regarded as being peculiar to the operation of resection, will comprise the second. These latter complications include mechanical accidents in the progress

of operation, haemolysis due to the entrance of non-isotonic fluid into the vascular system during the operation, and post-operative stricture of the urethra. In an attempt to assess the incidence of these various complications the case histories of 950 patients operated upon in private hospitals for what were regarded as clinically benign prostatic obstruction have been examined.

The ultimate in morbidity necessarily comes under the heading of mortality. In this series of patients the percentage of deaths was 2.75. It is interesting to note that in the group of patients seventy-five years of age and over, three deaths only occurred in 191 cases, a mortality rate of approximately 1.5%. The causes of death were mainly conditions unrelated to the urinary tract, three patients only dying with anuria. One of these deaths followed pneumonia, a second followed marked urinary sepsis with fever, and one occurred after what was regarded as haemolysis. The remainder of the fatalities were associated with cardio-vascular-pulmonary diseases of one nature or another. Examination of the records of a series of 250 public hospital patients disclosed five deaths, or 2%. The average age of the patients operated upon was sixty-seven years. A definite percentage of the patients manifested pre-operatively definite indication of cardio-vascular disease as shown by markedly elevated blood pressure, obvious arteriosclerosis, various irregularities of the heart, dyspnoea *et cetera*. Similarly chest complications in the way of emphysema or moist sounds in the lung were quite common. It was noted that only 1.7% of conditions were reported histologically as carcinoma when the clinical impression was benign or doubtful. In this group 1% of patients were subject to rerection, the previous operation having been conducted from a few days, when passing of urine was not free or when residual urine was prominent, up to twelve years after the preliminary resection. Of all cases, 10% were associated with vesical calculi.

Haemorrhage in the post-operative period has not been a matter of any great importance. During the patient's stay in hospital, post-operative bleeding, sufficient to produce catheter block requiring multiple freeing or replacement of the bag routinely used, occurred in less than 8% of cases, and 2.5% of patients required readmission to hospital for from one to six days for the relief of severe bleeding. None of these patients required cystostomy for their relief. In the post-operative period transfusion of blood was given in 6% of cases. Intravenous infusion of saline was used in a similar number of cases, but it should be noted that it is a routine procedure in our practice for a small intravenous saline injection to be given should the blood pressure fall alarmingly during the operation either as a result of it or of the spinal anaesthetic which is routinely used. Mechanical complications during operation occurred in less than 1% of cases. It must be understood that the greater the attempt to produce a complete prostatectomy, the greater the risk of perforation of the capsule. Immediate recognition of this complication by the presence of otherwise inexplicable pain during the operation and its relief by drainage prevent any untoward results from it.

Sepsis was of reasonably rare occurrence, and only in a very occasional case did a raised temperature persist for more than two or three days. Immediately there is any rise in temperature, urinary specimens are taken, sensitivity tests are instituted and the appropriate antibiotic is exhibited. Vasotomy was almost a routine and epididymo-orchitis was practically eliminated by these means. The average stay in hospital was twelve days. As all these patients were private patients, this is not quite a fair estimate, as public hospital patients are kept in a very little longer than eight days. The average stay is, of course, increased considerably in some of those cases in which suprapubic cystostomy has previously been performed, the delay being occasioned by the added length of time that the cystostomy takes to heal. This is particularly true of those cases in which the tube has been in place for a long while, and in many of these dissection of the sinus will be required before healing takes place. This group has been eliminated in the estimate of the bed days.

<sup>1</sup> Part of a symposium on "Morbidity following Prostatic Surgery", held at the annual meeting of the Urological Society of Australasia, Melbourne, on March 7, 1955.

Of the particular complications consequent on resections, by far the most important is stricture formation. Stricture in this series occurred in 7% of cases, and it is noted that the incidence of this troublesome complication has become greater as the years go on. This unfortunate fact persists, in spite of all possible precautions against its development. Under the heading of stricture, any hang in the introduction of the instrument has been recorded. In many of these cases few soundings will be required for apparent cure to result, and one knows of only an occasional case in which constant and permanent sounding is needed. Cases have been noted in which routine dilatations have proceeded for twelve months, and after a spell of two or three years the patient is free from urethral narrowing. Pre-operative stricture has occurred in 2% of cases. The aetiology of this post-operative form of stricture must be traumatic in some way or other. Although it is not peculiar to this form of prostatectomy, its incidence is admittedly considerably higher with transurethral resection. Various suggestions as to the aetiology have been made—namely, disproportion between the size of the urethra and the instrument used, idiosyncrasy on the part of the urethra to the rubber of the catheter, and so on. In these cases there has not appeared to be any direct relationship between the ease of introduction of the instrument and the development of stricture. In the occasional case, stricture is expected either because of some pre-operative narrowing or because of a distinct gripping of the sheath at the end of the operation. In these the exhibition of cortisone may be indicated. In other cases the development of the stricture is a complete surprise. The use of the Bardex bag may provide a source of stricture, particularly if care is not exercised in having the bag well lubricated and completely on the stretch during introduction. In this regard one of the most interesting and enlightening articles on the subject, published in a letter from the Urological Correspondence Club of America, has come to hand in a discussion of sheath breakdown as a cause of this stricture. H. E. Carlson, of Kansas City, quotes Buchtel in stating:

There are certain characteristics of high frequency current with which every urologist should be acquainted. The most important is that these currents cannot be insulated and therefore every part of the circuit is surrounded by a band of induced current. This is ordinarily diffused off harmlessly unless it is condensed. Those of you who have had experience with the metal-covered sheath will remember the destruction which was caused by the current collecting on the metal sheath and this may occur to a lesser degree by condensation on the urethra itself. He states the obvious way to eliminate this complication is by perineal urethrotomy.

Carlson goes on to say that he has been told that 35% of resections done in one institution were done through a perineal urethrotomy. In evaluating the problem of urethral stricture, Carlson states:

It was my observation that in my experience they appear to have occurred in cycles. At the beginning in the history of resection stricture was not a problem. The instruments were new and although the operating time was long, because of inexperience of all operators, the actual cutting time was short. Most of the time was occupied in looking. Strictures began to occur later and it was not until the purchase of a new instrument that strictures virtually disappeared, but only for a while. Again after the war, in purchasing new instruments, urethral strictures became virtually nonexistent in my experience, only to again reappear.

With these points in mind it seems reasonable that perhaps with long-continued use and immersion of the instruments in sterilizing solution for long periods that some change might occur in the bakelite sheath itself and reduce its insulating qualities.

Carlson therefore started with a new barrel and there were no strictures in 75 consecutive cases. In these cases meatotomies were done on rare occasions, no perineal urethrotomies were performed, and the 28 French resectoscope was used in virtually all cases. After 75 consecutive cases strictures occurred quite regularly and a new barrel was used. No strictures occurred for 80 cases. Carlson has now performed 350 prostatic resections using five different sheaths and each was used until strictures

appeared. Having read this letter, I immediately telephoned the instrument firm and ordered two new sheaths.

In very few cases, a matter of 2-5%, has it been deemed necessary to perform a perineal urethrotomy. However, meatotomy is performed quite frequently on the slightest suggestion of any hang—in all, 25% of cases. It is felt that the slightest breach of surface at the meatus is likely to be followed by stricture formation. This can be a very disturbing complication, but it is readily handled by a free incision with accurate suturing subsequently. Where there is any tendency to narrowing of the meatus post-operatively, either with or without meatotomy, a short dilator has been made with which the patient can routinely dilate his own urethra; it is felt that it is better for dilatation to be accomplished every day without any trauma or bleeding than to wait for a contraction of the meatus, the stretch of which may produce tearing and the production of more scar.

No obvious case of haemolysis has been seen in the last five hundred cases. It is stated by Creevy and others that, short of the obvious case of hemolysis with devastating results, many patients will have free haemoglobin in the plasma and that these may have a deviation from normal convalescence in various forms, but this has not been my experience. It is believed that the use of sterile water carries with it the advantage of perfectly clear vision, whereas the isotonic solutions such as glycine and glucose produce a definite clouding of the medium. It is believed that the morbidity rate arising from this clouding and the imperfect operation resulting from it would be just as high, if not higher, than the risks of hemolysis, providing the obvious precautions are taken against it. These involve an irrigator erected at a minimum height above the bladder, a dropping of this irrigator still further should any venous sinuses be opened, with the termination of the operation as rapidly as possibly should this occur.

Incontinence of urine is a complication after all forms of prostatectomy, and some of the worst cases I have seen have occurred after an imperfectly performed suprapubic or retropubic prostatectomy. In the early days of resection it was a bogey regarded as being due in every case to damage of the external sphincter. This cause of incontinence should surely now be very rare, and one realizes that most of the cases of incontinence that do occur are due to imperfect or incomplete resection of tissue around the external sphincter producing prolapse of tissue through it and causing the sphincter to be held open, or to close imperfectly. Another source of incontinence is also incomplete resection of what we refer to as the "buttocks" of the prostate, union of these portions of tissue taking place across the urethra, forming a bridge which again serves to hold the external sphincter open. This has been seen on quite a few occasions, and removal of these portions of tissue has resulted in perfect control. In this series of cases no instance of permanent incontinence has been encountered. On quite a few occasions, on removal of the catheter, the patient has become alarmed at his inability to control his urine, but with the effluxion of time, generally a few days, control is regained. On occasion, this period of time may be extended up to four, six or eight weeks. In some of these cases what is regarded as incontinence is better explained as precipitancy, but in the minor true cases of incontinence, control is achieved by instructing the patient how to exercise his perineal muscles.

Post-operative infection of the urine has often been suggested as one of the drawbacks of transurethral resection. I think that this is a relative complication. Within the first six to eight weeks the urine almost constantly shows large numbers of pus cells, but with the reepithelialization of the prostatic cavity the urine in most cases clears up overnight. The degree of infection again is relative to the completeness of the resection, and in this regard one must remember how often the enlarged prostate is also infected before operation. This infection may spread into the false capsule formed of compressed prostatic tissue, and whilst the amount of infection has been reduced according to the size of the prostate removed, a focus still may remain in this remaining portion of

tissue or in the vesicles, which would explain quite a number of these cases of post-operative pyuria. In only a few of these infected cases do symptoms occur with it, and should the patient be symptom-free, should he be emptying the bladder, should there be no obvious evidence of a distended vesicle, there is little need for active treatment.

Finally, 80% of the patients stated that they passed urine either not at all or once during the night—16% passed it on two occasions, and the remaining 4% on more occasions than this. It is felt that in a certain number of this last group the habit factor is important. In others, the erroneous fear that holding of the urine beyond a certain time may do harm, plays its part.

#### MORBIDITY IN RETROPUBLIC PROSTATECTOMY.<sup>1</sup>

By KEITH KIRKLAND,  
Sydney.

I HAVE been asked to discuss morbidity associated with the operation of retropubic prostatectomy. Consequently, I do not propose to consider sequelae equally related to other measures for the relief of bladder neck obstruction or complications arising as a result of a pathological background such as cardio-vascular or renal disease. In the time available it should be more profitable to consider disabilities actual and potential, which may occur operatively and post-operatively in specific relationship to any of the various techniques for prostatectomy by the retropubic route. As the Millin operation has served as a model for most surgeons, my remarks will apply in general to that procedure. Minor modifications do not affect the main surgical principles.

In some circles this method has replaced the transvesical or suprapubic, from which it differs in several essential features. An appreciation of these differences may be helpful in assessing the possible virtues or shortcomings of the operations, but as so many relative factors occur in any surgical procedure, evaluation is not easy.

In contrast to the transvesical operation, the space of Retzius is opened freely, some elements of the plexus of Santorini are destroyed by ligature or diathermy, the prostatic capsule is incised and the pudendal plexus opened. Inspection of the bladder is denied the surgeon, while the plane of cleavage is often less obvious and enucleation more difficult. When the hyperplasia is purely intra-urethral, disruption of the internal sphincter does not occur. The bladder is drained by catheter alone and this traverses the empty and reduced prostatic capsule. In general the period of such drainage is less than in the transvesical operation.

In comparison with transurethral resection the obvious differences between open and closed surgery and the morbidity resulting therefrom need no comment. By and large the catheter is indwelling post-operatively in the retropubic operation for a longer period than after resection, but this is probably more than offset by urethral trauma during the latter procedure. Few operations place such a premium on the judgement and skill of the surgeon, and this personal factor makes comparison difficult.

The features I have mentioned merit a more detailed consideration. The retropubic part of the space of Retzius has for a long time been suspect of all kinds of infective possibilities if opened. Thomson-Walker drained this area after suprapubic prostatectomy as he feared osteomyelitis of the pubis. Most surgeons avoid opening the space in the suprapubic operation. It is, however, doubtful whether such a malign reputation is justified. It has been said that free opening of the retropubic area, as demanded by the Millin operation, has been feasible only since heavy antibiotic cover became available, but that statement may

be accepted as an exaggeration. In the majority of my cases the use of antibiotics is avoided. The deeper areas of the space of Retzius are frequently opened and urine is spilled in removing calculi from the lower end of the ureter, and no morbidity results. I must admit, however, that when gross infection of the space does occur, it is a tedious complication. Recently I performed a Millin operation at a hospital where the nursing staff had had no experience in the post-operative care. On the second day after operation, the catheter became blocked, but nobody worried as the small tube to the retroperitoneal space was draining freely. The resulting infection was the penalty of the non-relief of a blocked catheter, that tube being the only drainage unit. Actually, at operation the area need not be contaminated by infected urine if ordinary care is exercised.

Destruction of the anterior or more centrally placed veins in the plexus of Santorini would appear to be unimportant. There is an adequate collateral return and circulation of blood. I have seen no oedema of the prepuce or penis and I have experienced no secondary haemorrhage as a result of ligation or diathermy in this region. It is of interest that Henry (1954) has suggested that prior to prostatectomy the whole space of Retzius and not merely the retropubic area be opened up with a view to preclusive vascular ligation.

Incision of the capsule and pudendal plexus in many cases leads to a free and immediate blood loss, but this can be controlled rapidly and easily by haemostatic forceps. If this bleeding is ignored, most of it ceases after enucleation. I prefer to underrun such vessels with a suture, rather than use diathermy, as I believe secondary haemorrhage is less likely to occur.

Careful enucleation of the hyperplastic masses can result in a prostatic cavity which is as smooth as that following the transvesical operation. This care must in particular be directed to achieving the enucleation without tearing the incision in the non-elastic prostatic capsule. Such a tear may render repair difficult and result in urinary leakage with infection, fistula formation and general delay in healing.

Enucleation through the incised capsule does not allow of free and complete visual inspection of the bladder, although palpation and digital examination are possible. Obviously, coincident pathological changes in the bladder could be missed, and for that reason in every case in which haematuria has occurred or complaint has been made of unexplained symptoms, pre-operative endoscopy should be performed.

I have always felt that in many cases post-operative bleeding in the Millin operation is greater for the first twenty-four hours than in the transvesical operation. To a large extent this may be avoided by meticulous efforts at haemostasis. All bleeding vessels should be controlled by suture, and all oozing points touched with light diathermy. Further, particular attention must be paid to the torn edge of mucous membrane around the bladder neck. In the anterior region this raw surface tends to retract, and even the most adequate full thickness repair suture for the capsule will miss it quite widely unless the area is everted. A fine running suture or light diathermy has proved to be an advantage in my hands. You will recall that this area is adequately controlled by the transverse occlusive sutures in the Harris operation.

Post-operative bladder neck fibrosis leading to obstruction and difficulty may be expected as a complication of the retropubic operation unless certain principles are recognized and precautions taken. When the hyperplasia is limited, as commonly happens, to the lateral lobes and enucleation is distal to the internal sphincter, the opening to the bladder may be very small. The continuity of the internal sphincter may not in any way be affected by the enucleation, but unless this continuity is broken, subsequent fibrosis and contracture will occur. It is probable that spasm of the irritated sphincter is a factor in the stricture formation. A wedge of tissue at the six o'clock position at the bladder neck should be removed to avoid this complication. When enlargement of the middle lobe

<sup>1</sup> Part of a symposium on "Morbidity following Prostatic Surgery" held at the annual meeting of the Urological Society of Australasia, Melbourne, March 7, 1955.

occurs, enucleation of this element and trimming of the related mucosa will result in sufficient enlargement of the bladder outlet, and no wedge excision is necessary.

I do not regard incontinence of urine as a potential risk in the retropubic operation. Enucleation of tissue can be rather less traumatizing than in the transvesical operation. In most cases it is possible, after enucleation has been commenced and the plane of cleavage defined, to draw the adenomatous masses by vulcilla away from the external sphincter and triangular ligament. Further, in the average case the rather shorter period during which the indwelling catheter is employed allows of earlier restoration of control. I have had no case in which incontinence has lasted for more than a few days after the patient's discharge from hospital.

Of recent years I have encountered more cases of meatal stenosis in each type of prostatectomy than ever before. In seeking an explanation, one cannot help associating this complication with use of antibiotics. This may be entirely fallacious and no more than a coincidence, but I feel that the altered momentum of healing and fibrosis which occurs when these substances are used could result in stricture formation. The urethritis of former days subsided gradually and on more physiological lines, owing to increasing host response and resistance. Some of you present today may recall James Blackwood's commentary at a former meeting of this society. He reported that in communities where Neisserian infection was endemic and untreated, urethral stricture was unknown. Ureteral fibrosis and stricture with related kidney destruction is sometimes the price paid when tuberculosis of the urinary tract is cured by antibiotic therapy. Another factor may be the size of the catheter. As this is the only method of drainage after operation, there is a general tendency to use the largest catheter possible, and so trauma in the introduction may easily occur, with every possibility of subsequent fibrosis and stricture. The complication may to some extent be avoided by meatotomy, yet I am not in favour of this being performed too radically. An untidy and maledirected stream must result. I believe that much of the meatal stenosis that follows any type of prostatectomy could be obviated by gentle and systematic dilatation before operation.

I have purposely left until last the curious complication of osteitis pubis. It is surely one of the most paradoxical sequelae encountered in surgery. Statistics all point to the rarity of the condition before the retropubic operation became popular. Muschat (1945) in a commentary reported that 25 cases had at that stage occurred. Many more have since complicated surgery and have by no means been limited to retropubic prostatectomy. An analysis of statistics and opinions does not lead to any conclusion that can be regarded as logical or scientific. Operations such as cystectomy, suprapubic prostatectomy and even transurethral resection of the prostate have been responsible. Mortensen (1951) collected 44 cases from members of this society, and of these seven were from his own practice, occurring in 200 operations. Moore (1951), in discussing Mortensen's paper, reported that 13 cases had occurred in his first 80 retropubic prostatectomies, but in the next 79 cases, which brought his experiences up to the time of his comment, no further instances had occurred. He was of the opinion that he had used diathermy rather less in the latter series. At Sydney Hospital two cases have occurred in approximately 200 operations, and it is of interest that a third case recently followed a two stage suprapubic prostatectomy. At Saint Vincent's Hospital, Sydney, there have been two cases in 213 operations. At these two hospitals eight surgeons would have shared the work. In my own hands in private practice the complication has occurred once in 151 cases.

None of the theories as to causation of osteitis pubis are convincing, and in a consideration of them it is a little difficult to justify the suggestion that the condition should occur more frequently in the retropubic operation than in any others in which the retropubic space is opened. Wheeler (1941) considered the condition to be a trophic-neurosis and allied to the acute bone atrophy of Sudeck. He attempted, by trauma, injury to the adjacent periostum,

and the introduction of infection to the retropubic space, to reproduce all operative possibilities, but was nevertheless unable to cause the condition in experimental animals. Lavalle and Hamm (1951) considered osteitis pubis to be a true inflammatory disease of the anterior pelvic girdle. They based their arguments on the findings in bone biopsy in three cases, but in none was there any benefit from antibiotic therapy.

As no sequestra are formed and ultimate recovery is effected by complete regeneration of the osteoporotic tissues to their former calcium content, the condition can hardly be accepted as truly inflammatory. It seems more reasonable that a nutritional disturbance occurs and that either adaptation takes place or local blood supply returns to normal. Mortensen in his comprehensive review said: "It is believed that the actual pathology remains unsolved, all the various theories evolved being inadequate in their explanation."

I have not attempted to cover the subject of morbidity by quoting a lot of statistics. As this is a major operation, generally performed on elderly patients, very often in poor general condition, many unassessable and variable influences affect the results and can introduce morbidity. For these reasons I have felt it better to discuss the problems of morbidity in their potential.

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#### DIVERTICULUM OF THE ANTERIOR PORTION OF THE URETHRA.<sup>1</sup>

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DIVERTICULUM of the urethra in the male is a relatively uncommon condition, and much less attention has been devoted to it in the literature than to the same condition occurring in the female. The subject has been fully reviewed on several occasions in recent years, notably by Kretschmer in 1936, Pate and Bunts in 1949, and Abeshouse in 1951. Pate and Bunts collected 225 cases of diverticulum in the literature, of which 130 were situated in the anterior portion of the urethra. Abeshouse in his paper dealing only with anterior urethral lesions dealt with 224 cases in a most comprehensive review. All three cases of this report are of this type, and it is proposed to confine discussion to certain aspects of diverticulum of the anterior portion of the urethra only.

#### Case 1.

The patient, A., was aged fourteen years. His parents stated that when two years old he had had great difficulty in passing urine and developed pain in the loins. They did not know the nature of the condition, but said that the passage of sounds on one occasion had relieved him.

He presented with subacute left epididymitis following the passage of dark, milky urine two weeks previously. His stream had never been good. At school he noticed that he could not project his stream as far as other boys and that the bore of his stream was small. It took him a long time to finish and even if he tarried there would always be a slow ooze from his urethra into his clothes. Physical examination revealed no abnormality apart from a sub-siding epididymitis. There was no lump in the perineum. The urine showed 15 leucocytes per high-power field and *Staphylococcus aureus* was grown on culture. The cysto-

<sup>1</sup> Read at the annual meeting of the Urological Society of Australasia, Melbourne, March 7, 1955.

gram displayed a large amount of residual urine and in the urethrogram were shown a diverticulum near the peno-scrotal angle and a false passage in the bulb (Figures I and II). There was also relative narrowing of the anterior portion of the urethra. Cystoscopy, performed with the infant cystoscope because of this narrowing, showed a trabeculated bladder containing some of the oil used in the urethrogram three weeks previously and an oedematous obstructing posterior urethra.

At operation an incision was made over the region of the diverticulum, but even with the urethra displayed and distended with fluid, the site of the diverticulum was not obvious. When the urethra was opened the diverticulum was found to be confined to the mucosa alone, forming folds of valve-like constriction. These folds were removed and resection of the bladder neck was performed via the urethrostomy. The urethra was repaired over an indwelling catheter. During his convalescence he developed a haematoma of his wound, a small perirethral infection and an epididymitis. He now has sterile urine and a better stream than ever before, without any terminal dribbling.

This diverticulum is a congenital one, of a rare type, sometimes known as the "concealed" type, since, being composed of mucosa only and confined within the wall of the urethra, it fails to display the usual signs of a diverticulum.

### Case II.

B, aged thirty-three years, had been treated for gonococcal urethritis in 1938. In 1945 and again in the following years perineal abscesses, presumably the sequelae of periurethral inflammation, had been treated. In 1947 a perinephric abscess was drained. He presented in 1951 with subacute epididymitis. He stated his stream had been very slow for years and recently was no more than a dribble. Sounds had not been passed since 1941. The positive findings on examination were a thickening of the urethra, most marked in the perineum, and a moderate urinary infection, *Staphylococcus aureus* being the organism. The urethrogram demonstrated stricture formation along almost the whole of the anterior portion of the urethra, while in the region of the bulb is seen a diverticulum (Figure III).

He has been treated by periodic dilatation and is symptom-free. His diverticulum is to be considered as an acquired one, secondary to distal obstruction and previous periurethral abscess formation.

### Case III.

C, aged eighty-one years, had undergone surgical operation at another hospital five years previously, when perineal and suprapubic suppurations had been drained with the subsequent development of temporary urinary fistulae. Bladder neck obstruction with possible vesical calculus was diagnosed, but the patient refused operation. Eighteen months later he agreed to operation and resection of the prostate and removal of a vesical calculus were performed. He had been perfectly well after this, with no dysuria until eight months before he presented himself, when he complained of the recurrence of dysuria, frequency of micturition and recent incontinence day and night.

His urine was infected, *Bacterium coli* and *Bacillus proteus* being grown on culture. The prostate was small and firm. Near the peno-scrotal angle there was a small calculus palpable, ventral to the urethra, and on distension of the urethra with fluid a swelling became obvious in this region. The cystourethrogram showed a considerable amount of residual urine, an anterior urethral diverticulum containing a stone, an irregularity of the posterior portion of the urethra, and a stricture (Figures IV and V). On panendoscopy the bladder was found to be trabeculated and infected, and there was some prostatic tissue present on the left side. The diverticulum was excised through a mid-line incision and the residual prostate was resected via the urethrostomy. Convalescence was uneventful.

This is to be considered an acquired diverticulum developed on the basis of periurethral infection with fistula formation and stricture.

### Aetiology.

The generally accepted classification of urethral diverticula is that suggested by Watts in 1906.

#### A. Congenital diverticula of the urethra.

#### B. Acquired diverticula of the urethra.

1. From dilatation of the urethra due to (a) urethral calculus, (b) urethral stricture.

2. Perforation of the urethra from (a) injuries of the urethra, (b) rupture of abscesses into the urethra, (c) Rupture of cysts into the urethra.

### Congenital Diverticula.

Difficulty arises in deciding which cases are to be considered as congenital and which as acquired. Abeshouse, of his 224 cases, classified 94 as congenital—a higher proportion than other authors have found. The average age of his patients was 13·6 years, more cases being found in the one to five year age group than in any other similar period; some occurred in very young babies. Many theories have been put forward to explain the occurrence of these anomalies.

Voillemier (1868) considered the condition an incomplete degree of hypospadias. Kaufman (1886) believed the cause to be obstruction during foetal life by delayed union between the penile and glandular portions of the urethra and considered the valves found in some cases to be the remnants of this septum. Watts (1906) also considered distal obstruction to be the explanation. The most reasonable explanation is that of Suter (1908). As the urethral groove develops and the folds on either side join, there is a stage before complete fusion occurs, at which epithelium forms a bridge between urethra and skin. If this bridge persists in some degree in communication with the urethra, a diverticulum may result. Small tubular structures of such a nature have been demonstrated by Johnson (1923) in the 28-millimetre embryo. More extensive anomalies of this region may be the basis of accessory urethral channels. The majority of congenital diverticula occur in the penile portion of the urethra and they are uncommon in the region of the bulb.

The congenital diverticulum shown in this series belongs to the rare type described by Gross and Bill (1948) as concealed diverticula. These authors report three cases of this type and these cases are of considerable importance in that two out of three children died of this condition. All three showed signs of bladder neck obstruction caused by such a diverticulum, but in two cases the lesion was undiagnosed and untreated. One child was treated by sounds, then by exploration of the bladder neck on two occasions, tissue being removed from the bladder neck at the second operation, the case being considered one of hypertrophic sphincter. In the second fatal case the patient also underwent exploration with negative findings. The diagnosis in the third case was made obvious on urethrogram and a successful operation performed. Two other cases of similar type were described by Knox (1947) and Dees (1950).

These five are the only other cases of diverticulum I have found in which a swelling below the urethra is not present or cannot be displayed by filling the urethra. This sign is said by some to be the most constant sign of diverticulum, but in view of these few cases, absence of a swelling must not be taken to exclude diverticulum. In all five cases the diverticulum was confined within the walls of the urethra as in the case described.

### Acquired Diverticula.

The aetiology and pathology of acquired diverticula are well known and do not require elaboration in this paper. They occur usually as sequelae of stone, stricture, trauma and sepsis, especially periurethral abscess. A stage in the development of urethral diverticulum from periurethral abscess is shown in Figure VI.

This patient underwent resection of the prostate, no abnormality being noted in the urethra. Five days later a swelling was noted at the neck of the scrotum and this was at first considered as an abscess of the vasotomy wound. It discharged pus and soon afterwards, when the bladder was emptied, a discharge of urine occurred through the wound. After several days of catheter drainage the fistula healed and a subsequent urethrogram showed the abscess cavity or early diverticulum displayed in the reproduction.

Fagerstrom (1943) postulates a neurogenic origin for some diverticula in which the usual causes do not apply. He quotes two cases discovered after suprapubic prostatectomy with post-operative incontinence.

One patient suffered from incontinence, haematuria and a burning sensation in the perineum after prostatectomy three years previously. A perineal lump had been present for two years. A diverticulum was found at the peno-scrotal angle and excision of the diverticulum had no effect on the incontinence.

A second patient had partial incontinence after prostatectomy thirteen years previously. Excision of a diverticulum distal to the bulb was ineffective in an attempt to cure the incontinence.

He found a third similar case in the literature. He considers that the coincidence of incontinence and diverticulum suggests a nerve lesion caused by the hyperplastic prostate or the operation of prostatectomy. For the production of such a double lesion he believes that the spongy urethra and prostate have a common innervation. He admits that this theory requires experimental support.

Pate and Bunts (1951) report a series of 28 cases of acquired anterior urethral diverticula occurring in paraplegics in whom the factors of sepsis and trauma were responsible. Twenty-six of these diverticula resulted from periurethral abscesses, all the patients being on catheter drainage at the time, an average period of four and a half months having elapsed since treatment began. It is interesting that 28 other cases of abscess occurred without diverticulum formation, a total incidence among 402 patients of 13.4%. It should be noted that more than half of these complications occurred before transfer to the clinic of Pate and Bunts and the incidence for their own cases is 5.7%. These authors considered Fagerstrom's theory of neurogenic origin of diverticulum in an effort to explain why some abscesses went on to diverticulum formation, but were unable to find any definite neurological pattern to support the theory.

In several cases the diverticulum formation has been attributed to the use of an incontinence clamp with resulting dilatation and sepsis.

#### Complications.

Calculus formation was noted by Abeshouse (1951) in 31 of 94 congenital cases and in 26 of 130 acquired diverticula. Infection is common, either local or ascending, and fistula formation may occur. Where obstruction is marked and treatment delayed, renal failure and death have been reported.

#### Symptoms.

The congenital type may remain asymptomatic for years and some are found by chance during examination or at post-mortem examination. Acquired diverticula, arising as they do on a pathological basis, probably cause symptoms from their inception. The commonest symptom is dysuria, especially dribbling of urine as micturition finishes. The stream may be thinner and slower and, in some cases, the initial flow is normal, but rapidly fails as the diverticulum fills and obstructs the urethra. True incontinence as opposed to terminal dribbling has been observed, as in the post-operative cases mentioned. Incontinence of urine is usually associated with diverticula near the sphincter, and it is believed that involvement of the sphincter by the infective or fibrotic processes producing the diverticulum is the causative factor.

Frequency of micturition is common. Patients may present with symptoms of infection of the lower or upper tracts and haematuria and urethral haemorrhage have been noted. Urethral discharge is common. Many patients have been aware of the swelling in penis or perineum.

The outstanding sign of diverticulum is the presence of a swelling on the ventral aspect of the urethra. This distends during urination and subsides as micturition ends, or in some cases, if of moderate size, is emptied manually by the patient. Smaller diverticula can of course be rendered tense and prominent by urethral instillations. The concealed diverticula do not reproduce this sign. Pressure over the diverticulum usually results in the discharge of a small quantity of urine through the meatus. A calculus may be palpable.

The diagnosis may be confirmed by viewing the orifice of the diverticulum by endoscopy, but by far the most

effective means of displaying the anomaly is urethrography, as the slides have shown.

If this examination is made in cases of dysuria, the differential diagnosis of lower tract obstruction need not be considered. Cases not investigated in this way have been mistakenly diagnosed as due to bladder neck obstruction, urethritis, enuresis and the swelling as a hernia, hydrocoele or periurethral abscess.

#### Treatment.

Small asymptomatic diverticula do not require treatment. A diverticulum secondary to a stricture, as in the second case, may be left alone if the patient becomes symptom-free after treatment of the stricture.

The majority of diverticula require operation. The removal of any aetiological condition and the treatment of any infection are essential for success. Attempts at enlarging the orifice of the diverticulum by endoscopic methods are rarely successful, though in the hidden variety where mucosa alone is at fault, this may be feasible. In their third case Gross and Bill treated the patient by opening the diverticulum and nibbling away the redundant mucosa with a ring punch. Knox (1947) attempted by plication of the bulbo-cavernous muscle to exert pressure on a diverticulum and to prevent it from filling. A good result was obtained temporarily, but excision was then undertaken. Attempts at invagination of the diverticulum have been useless.

The accepted method of treatment is excision of the diverticulum with repair of the urethra at the site of the orifice. This repair is most commonly done by careful suture.

Forshall and Rickham (1953) excised a diverticulum in a five months old baby and successfully applied the Denis Browne technique to obtain reconstitution of the urethra. Diversions of the urinary stream by perineal urethrostomy or cystostomy is recommended by Campbell and others, but in many cases in which an indwelling catheter has been used good results have been obtained.

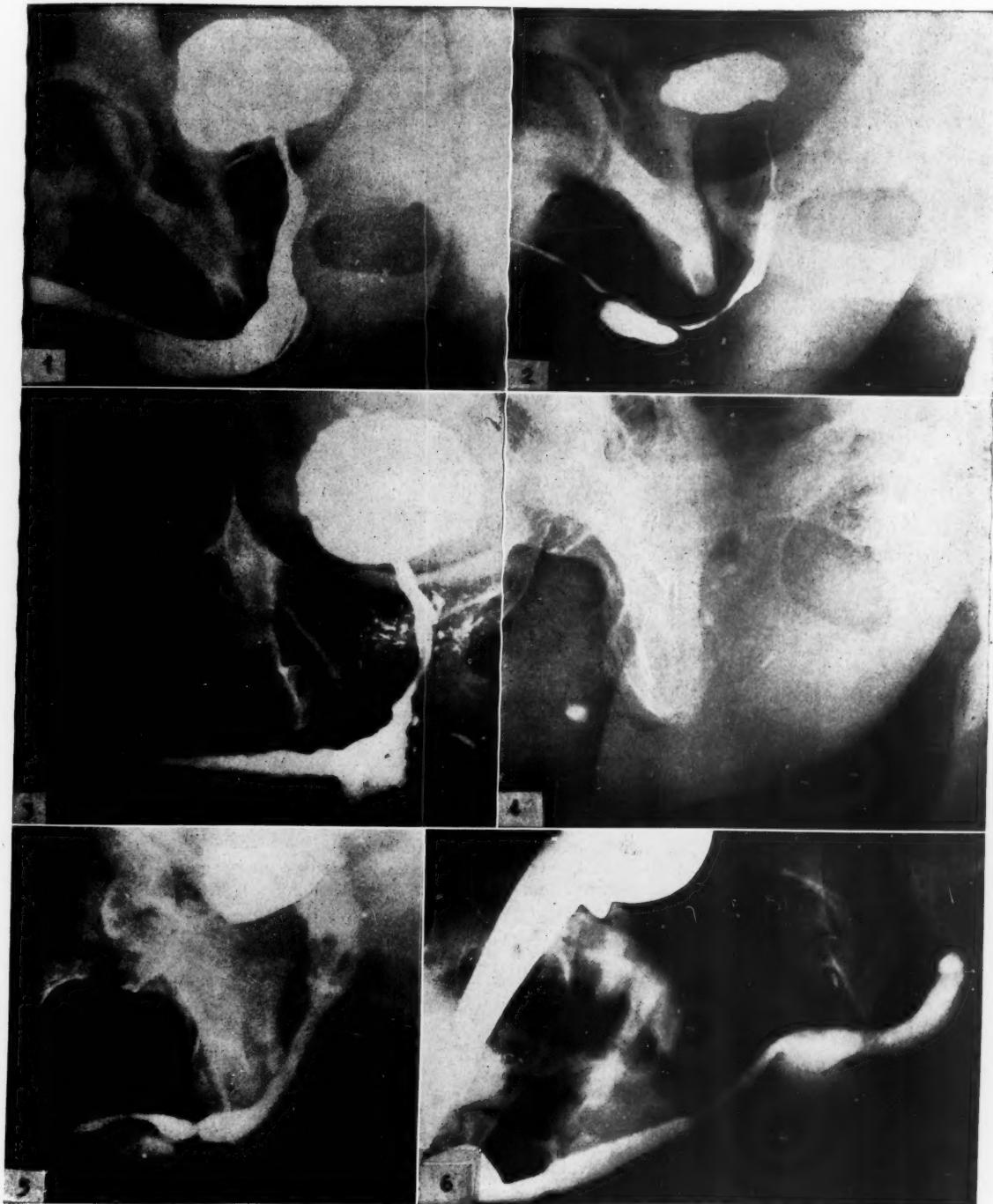
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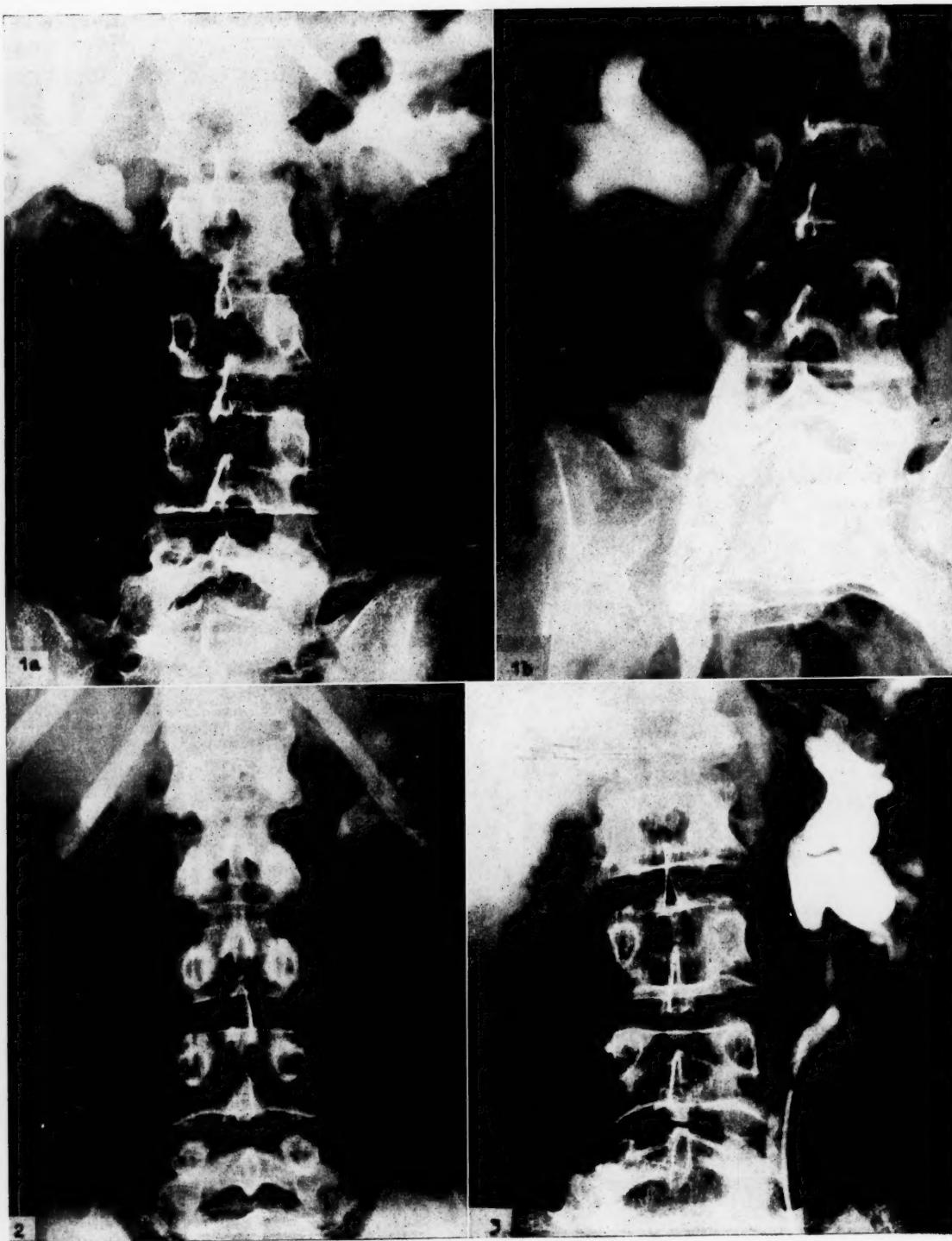
#### Legends to Illustrations.

- FIGURE I.—Case I: Congenital diverticulum, injection picture.
- FIGURE II.—Case I: Congenital diverticulum, emptying picture.
- FIGURE III.—Case II: Diverticulum of bulb, with urethral stricture.
- FIGURE IV.—Case III: Calculus in diverticulum of urethra.
- FIGURE V.—Case III: Urethral diverticulum.
- FIGURE VI.—Healing periurethral abscess.

ILLUSTRATIONS TO THE ARTICLE BY LEONARD MURPHY.



ILLUSTRATIONS TO THE ARTICLE BY R. J. SILVERTON.



NEPHROPEXY IN NEPHROPTOSIS.<sup>1</sup>

By R. J. SILVERTON,  
Sydney.

For many years I have been intrigued by the fact that the application of nephropexy to the treatment of symptomatic nephroptosis has been a most controversial question among surgeons. The great antipathy to this operation in many quarters has been puzzling to me, for I have found it most useful, both as a primary and as a secondary procedure. By the latter I mean suspension of a kidney after pyelolithotomy, division of aberrant vessels, and so on, in order to ensure good drainage from the organ and to prevent adhesions between the lower pole and the upper part of the ureter.

We all know that many years ago nephropexy was used commonly, on very slight indications and without previous urological study. Such a course was bound to bring the operation into disrepute, but for surgeons, particularly urologists, to abandon it entirely, as many do, simply means that many patients are deprived of the surgical relief that could be afforded, provided true indications for the operation are present.

In the last decade or so there has been a rather scarce literature of this subject. However, a rather important article emanated from the Mayo Clinic in 1951 by Braasch, Greene and Goyana, with the provocative title, "Is Nephropexy Useless?". The authors conclude from their analysis of results that most patients will receive greater benefit from non-operative measures. They reviewed 230 cases of nephroptosis seen at the clinic during ten years, and state that in only 21 of these were the patients subjected to nephropexy. The total number of cases of nephroptosis observed does not mean very much, for we all observe this phenomenon very frequently, clinically and radiologically, and as a rule it is quite asymptomatic, and we are careful not to mention its existence to the patient. Only three of the 21 patients operated on at the Mayo Clinic obtained complete relief from nephropexy, and in eight cases the relief was only partial. In 10 patients there was no relief. I note that in an earlier article (1948) by the same authors, their technique is given, and in my opinion it is an insufficient and faulty method.

A couple of years earlier (1946) in the United States of America, Burford painted a much more reassuring picture, and over a far greater scope of operative experience. In just under 200 nephropexies he said that he never had to reoperate because the kidney became loose. He does not reflect flaps of capsule, an abstention I approve of, for the unreflected capsule affords a firmer hold for the suspending sutures. He also suspends his sutures from higher points than do the Mayo workers. However, the great lack in Burford's paper is that he does not give an analysis of the post-operative and remote results.

## Symptomatology and Indications for Operation.

The commonest symptom is pain after exertion, or after standing for some time. The pain may be severe, but is more often of a dragging or aching character, sometimes confined to the loin, sometimes with an anterior or distal radiation. Occasionally it is of a colicky type; I presume that in such cases the ureter is blocked, usually by a kink where the mobile portion of the duct, running through the loose perinephric fat, meets the relatively immobile part attached to the posterior surface of the peritoneum. It is to be understood that the mobility referred to is a more or less up and down movement as the upper two or three inches of the duct moves with the kidney; below the point of peritoneal attachment the duct has practically no up and down movement. When excretion urograms or retrograde pyelograms display an acute angle at or near the uretero-pelvic junction, or kinking a little lower down, or even show a clear bar across the ureter, one suspects

pressure of aberrant vessels running across the duct to join the lower renal pole.

The dragging or aching types of pain may also be due in some degree to less complete obstruction, but also to a drag on the renal plexus.

It is a great advantage to urologists when radiologists routinely make their exposures during excretion urography with the patient in the Trendelenburg and upright postures as well as the flat. We can then study the full range of movement, both of the kidney and of the upper portion of the ureter. It would be a further advantage if, before the upright picture is taken, the radiologist instructed the patient to stand up, and even walk a little, for a few minutes.

A symptomatic mobile kidney is often tender on bimanual palpation, and one may be able to get the examining hand above it and keep it down. The latter discovery, however, is not always important, for such a "floating" kidney may have no clinical importance at all. Conversely, even though the kidney cannot be easily palpated, even a slight degree of mobility, in conjunction with the presence of aberrant vessels or certain adhesions, may be sufficient to cause pain.

Should one consider it necessary to proceed to cystoscopy and retrograde pyelography for further elucidation of a difficult case, it is necessary to make an exposure in the vertical, or at least 60°, posture, to show up loops, kinks and so on. When this is done immediately after cystoscopy under a local, or a short-acting general, anaesthetic, the patient tends to faint when put up. I find it far better to send her back to bed for two or three hours, and then to do the retrograde study. This is all the more important when one considers that the result will be truer if she is kept upright for a few minutes before the exposure. The picture should also be taken in full inspiration to get the greatest downward excursion of the kidney, a condition which applies when the patient is experiencing the distressing drag or ache she gets at the end of a heavy day's housework.

Vesical symptoms are often present as well, indicative of cystitis, which may be secondary to a pyelonephritis of the mobile kidney. These infective episodes are usually intermittent, may be quite severe in the bladder and may cause extra pain in the infected kidney. In a few cases in this series I have noticed the latter symptom post-operatively, when the patient has resumed activity too early, or too strenuously.

When one thinks that nephropexy is indicated, it is advisable to have the urine cultured on several well-separated occasions, even if it appears crystal-clear to the naked eye; infection is present in a proportion of clear urines, and can be quite irregular in its incidence in any one patient. A few years ago one of my patients had bilateral pain, worse on the right side, and radiological help disclosed bilateral ptosis with kinking, worse on the right side. I advised right nephropexy, apparently too quickly, for, after arrangements had been made, she later cancelled the operation by telephone, saying that she had consulted a urological colleague who had cured her symptoms with streptomycin. Evidently he had caught her urine when it gave a positive colon bacillary culture.

Another precaution I used to observe before advising nephropexy was the application of a strong, well-made visceropelvic corset, with firmly pressing suprapubic pad. After many years I found that sometimes the pad gave no relief, or the side was too tender to bear it, or else the symptoms returned when, after six to twelve months, the corset was left off. With rare exceptions I have given this up.

## Technique.

In patients who are thin and worn out, a holiday, mostly consisting of rest, for a month, or even several months, before operation, is of great value.

As mentioned in the previous section, infection should be sought for on many diverse occasions, and, if present, conquered by antibiotics and general building up of resistance, as well as a high vitamin diet and added vitamin A.

<sup>1</sup> Read at the annual meeting of the Urological Society of Australasia, Melbourne, March 9, 1955.

Since the kidney is mobile, the old classic subcostal incision is in order, but, if the twelfth rib is abortive, the incision can be made along its usual line, and the suspending mattress sutures brought up through the tenth intercostal space instead of the usual eleventh.

Great care is taken not to damage the renal capsule during delivery if one is intending to use a technique of suspending sutures. The kidney is completely exteriorized, and kept out by placing two large pads across the wound, one above and one below the renal pedicle.

Just before this is done, however, the pelvis and upper part of the ureter are inspected, and any complicating lesion is dealt with. Aberrant vessels running to the lower pole should be resected for a length of several centimetres, unless they are very large in diameter. All fibrotic tissue accompanying the vessels should be dissected away, so as to leave no trace of any tissue that can compress the ureter later. In all cases, whether aberrant vessels are present or not, a tiny nick should be made in the renal pelvis, and a wide seeker, such as the MacCormick dissector, passed downwards to make sure there is no intrinsic obstruction at the uretero-pelvic junction or in the upper part of the ureter. In the event of a plastic operation being necessary, there will always be a nephrostomy drain. If this issues from the convex border about one-third of the way up from the lower pole, and is brought out at the very upper end of the wound, it will both suspend the kidney at a high level and tilt the lower pole outwards, the two basic conditions of a well-performed nephropexy. The nephrostomy is always retained long enough to secure good adhesion of the kidney in its high position.

Should a calculus be present in the pelvis or one of the calyces, it is removed, if possible, by pyelotomy, either alone or combined with a very limited nephrotomy, and then the nephropexy proceeded with in the normal way by suspending capsular sutures, the renal pelvis being left partly open to allow easy extrusion of any clots, an extra-renal drain being employed in every case.

The actual method of suspension or fixation varies with different urologists. For many years I used the technique of Georges Marion, of Paris, in which four triangular flaps are raised from the posterior aspect of the capsule. The bare area left allows fixation to the tissues with which it is in contact, while sutures passed through the base of each flap run upwards to be passed through the lowest intercostal space to suspend the kidney. Sometimes troublesome bleeding accompanies the raising of the flaps, but a more important objection to the method is that the capsule is often thin, and sutures passed through the reflected flaps tend to tear through. Tilting outwards of the lower pole is accomplished fairly well by the Marion method, and the method of getting the suspending sutures up through the lower chest wall is retained in my present technique. This will be referred to shortly.

For the past fifteen years I have, except for an occasional case at the beginning of this period, not raised flaps, but have relied on large mattress sutures passed in and out through the unraised capsule. This is a modification of the method described many years ago by Charles Pierre Mathé, of San Francisco. If one pulls with moderate vigour on each mattress suture, just after it is inserted, it will be seen that it holds strongly.

The sutures may be of any permanent or semi-permanent material, my own preference being for number 0 semi-chromicized gut, swaged on to a rather large, half-circle, atraumatic needle. Each U-shaped suture commences about two centimetres distal to the upper extremity of the kidney, about one centimetre from the medial or lateral border, and is taken distally for two moderate bites, running just under the capsule, and outside it for about one centimetre between each bite. One or two bites will then take the suture across the kidney, after which it runs proximally again to be completed. Usually this suture runs down for about half the length of the organ. A similar suture is placed on the opposite surface of the kidney. The third and final suture is a postero-inferior one, rather near the lower pole. One bite down, one across

and one up are all that is necessary for this smaller mattress suture. It is very important to take only small or moderate bites of the capsule, otherwise the turning needle will cause tearing of this rather thin membrane.

For passing the suspension sutures up through the last intercostal space and the *quadratus lumborum*, I revert to the Marion technique, using a fairly large, boldly curved Reverdin needle. The upper skin edge of the wound is seized with two pairs of tissue forceps and drawn up over the chest, so that one can palpate the last intercostal space. The closed Reverdin needle is passed through the space, rather posteriorly, while the forefinger of the other hand guides its point as it punctures the diaphragm. The guiding forefinger must pass up to the diaphragm beneath the perirenal fascial edge. When the point of the Reverdin needle appears, its slot is opened by the surgeon, and the assistant places one end of the posterior mattress suture in the groove. The surgeon closes the groove, converting it into an eye, and withdraws the suture on to the surface of the chest wall. The other loose ends of the main sutures are dealt with in the same way, the mattress suture on the anterior surface of the kidney passing through the intercostal space a little in front of that from the posterior surface.

The assistant now pushes the kidney gently up against the diaphragm, while the surgeon pulls gently on both mattress sutures, and then ties them securely in the last intercostal space. It will now be seen that about one-half of the organ lies above the twelfth rib.

The Reverdin needle is now passed through the *quadratus lumborum* muscle quite near the upper end of the incision, a very deep bite being taken, but the first lumbar nerve being avoided as it courses over the muscle surface, and one end of the little postero-inferior mattress suture is withdrawn to the surface of the muscle. The other end is dealt with similarly, and the suture tied. It will be seen to elevate the lower pole a little more, and to pull it laterally and towards the quadratus muscle quite distinctly. This tilting is important in facilitating urinary drainage down through the pelvi-ureteric junction, and in preventing future adhesion between the upper part of the ureter and the medial border of the lower renal pole, a not uncommon source of remote obstruction.

Since the urinary tract has usually been opened, if only to test for intrinsic obstruction, I invariably leave a fairly fine extrarenal drain down to the region of the lower pole for three days.

#### After-Care.

The subject of after-care is given a section to itself because of its capital importance. I have a very strong feeling that much of the dissatisfaction with the operation of nephropexy arises from the fact that, if care is not taken, the kidney can come loose from its new moorings quite early after the operation.

It is likely that the actual method of performing the operation is not of great moment, provided the kidney is taken up high to straighten out irregularities in its duct, and that the lower pole is tilted laterally. Given this, the next vital factor in the management is prohibition of any vigorous active movement in the first ten days, and reasonable care for some time after discharge from hospital. After the operation, the patient is only allowed up into full sitting posture very gradually—that is, not till after several days. During the first ten days she should make hardly any active bodily movements, but be turned or moved up and down by nurses. After ten days she is allowed up carefully in a chair, or to stand a little, but not to walk about till the fourteenth day. Between the eighteenth and twenty-first days she can go home, but should treat herself like an invalid for one month, building up her general and antibacterial resistance. She should walk a little, rest a lot, and keep on a diet with a high vitamin content with added vitamin A. I have now and then seen too early exertion precipitate a urinary tract infection, with pain in the elevated kidney and cystitic symptoms.

At the end of this post-hospital month she sees the surgeon for a check examination. If all is well, she is now allowed light household duties or other gentle exertion for a further month, but movements of rotation, as in most sports, sweeping and so on, are taboo. After this period she is allowed freedom to do as she likes, provided a further urine and clinical check shows no abnormality. From the study I have made of the 56 cases analysed in the present series, I have made up my mind that, in addition to the above precautions, I am going to have every patient who has undergone nephropexy called back one year later for a remote clinical, urographic and urine check.

#### Analysis of Cases.

This paper is based on observations made on 56 patients undergoing nephropexy, mostly as a primary, sometimes as a secondary, procedure during a ten-year period. Of these, 26 patients were treated in public hospital practice at the Royal North Shore Hospital of Sydney during the ten years terminating at the end of 1951; the remaining 30 patients were treated in private practice during the ten years terminating towards the end of 1954.

The operation was used as a secondary, or as an adjuvant, procedure in nine cases out of the 56; five times accompanying division of aberrant vessels was carried out, twice accompanying pyelolithotomy was performed, once the procedure was accompanied by nephrostomy and once by ureterolysis.

As regards results, an analysis of the early post-operative results is made (one to five months). A letter was sent recently to all patients in the series putting questions about their present renal and vesical state. From the replies received one can get an estimate of the remote efficacy of the operation in a reasonable proportion of the patients.

The following is an analysis of presenting symptoms, with the numbers of cases:

Pain in the right loin with cystitic symptoms . . . . .	23
Pain in the right loin only . . . . .	7
Pain right loin with cystitic symptoms and haematuria . . . . .	6
Pain right loin with anterior radiation and cystitic symptoms . . . . .	4
Pain right iliac fossa and cystitic symptoms . . . . .	3
Pain in left loin only . . . . .	3
Bilateral pain, worse on right side . . . . .	2

One case of each of the following: left loin pain with anterior radiation; right loin pain with haematuria; right loin pain with haematuria and vomiting; right loin pain with headache, fainting fits *et cetera*; pain in right iliac fossa with sacro-iliac pain; no loin pain, but vomiting and headaches; no loin pain but cystitic symptoms and bilateral pain with cystitic symptoms.

The duration of pain in the loin or side, with the numbers of cases, was as follows:

No renal pain . . . . .	2
Three days only . . . . .	1
Three to eight months . . . . .	12
One year . . . . .	10
Two to three years . . . . .	10
Four to six years . . . . .	6
Seven to eight years . . . . .	3
Ten years or more . . . . .	12

Infection was present in the following numbers of cases:

No infection . . . . .	13
Probable previous infection . . . . .	18
Recent definite infection . . . . .	4
Light <i>Bacillus coli</i> infection . . . . .	6
Moderate <i>Bacillus coli</i> infection . . . . .	3
Heavy <i>Bacillus coli</i> infection . . . . .	7
<i>Staphylococcus albus</i> infection . . . . .	3
Streptococcal infection . . . . .	1
<i>Bacillus proteus</i> infection . . . . .	1

These figures show that over three-quarters of all patients were either definitely infected, or, by their symptoms of bladder trouble, had almost certainly previously been infected.

The radiological diagnostic methods used, with numbers of cases, were as follows:

Excretion urography, with a vertical exposure . . . . .	36
Ditto, and also right retrograde pyelography . . . . .	7
Ditto, and also bilateral retrograde pyelography . . . . .	6
Ditto, and also left retrograde pyelography . . . . .	2

Ditto, and same examination repeated early after operation . . . . .	2
Ditto, made twice before operation . . . . .	1
Ditto, and also right retrograde pyelography, and in addition, an estimate of right kidney emptying time . . . . .	1
Right retrograde pyelography alone . . . . .	1

My own criticism of this list is that I should have done cystoscopy more often, with retrograde pyelography, and perhaps an estimate of the renal emptying time in certain cases.

The complicating factors, with the numbers of cases, were as follows:

No complicating factors . . . . .	24
Very gross kinking of upper part of ureter . . . . .	6
Division of aberrant vessels necessary . . . . .	5
Definite hydronephrosis present . . . . .	4
Corset worn ineffectively for years before . . . . .	4
Removal of renal calculus at same time . . . . .	2
Post-operative pyelonephritis . . . . .	2
Nephrostomy necessary as well . . . . .	1
Ptosis extremely severe . . . . .	1
Ptosis of opposite kidney after some months . . . . .	1
Relief from corset, but only while on . . . . .	1
Severe anxiety state present . . . . .	1
Long rest in hospital necessary before operation . . . . .	1
Protracted post-operative retention . . . . .	1
Ureterolysis necessary as well . . . . .	1
Hypertension and repeated cystitic attacks . . . . .	1

#### Type and Side of Operation.

The Marion operative technique was followed in only four cases, all of them near the beginning of the series. In the remaining 52 operations the technique described above was followed. There were actually 53, for in one patient the left kidney became suddenly and painfully dislocated seven months after the right nephropexy, and had to be suspended during the following month. This was the only bilateral nephropexy in this series, though another patient, who had a right nephropexy associated with division of an aberrant vessel, had to have a left nephropexy soon after the termination of the period under review.

Left nephropexy was performed in six cases, excluding the bilateral case just mentioned.

Nephropexy was performed in six male patients. Three of them were just about the age of thirty years, two were in the fifties and the other was sixty-two years of age.

#### Case Reports.

Since it would take too much space even to give a short report of each of the 56 cases in this series, I think it is more illuminating to select certain cases displaying special features, as well as some which are uncomplicated and run a normal course.

#### Case II.—Right Nephroptosis with Hydronephrosis and Aberrant Vessels. Calculi in a Practically Functionless Left Kidney. Good Result.

A female patient, aged fifty years, was a little Welsh spinster, who had pain and tenderness in both loins. Since the left kidney was almost functionless, I concentrated first on trying to save the right kidney, which was very low and hydronephrotic. Excretion urograms showed the above points, while retrograde pyelograms displayed obstruction at both uretero-pelvic junctions, with a lot of gravel at the bottom of the left organ. I saw her first in February, 1945, and explored the right kidney in April. An extremely large aberrant artery and vein ran to the lower pole, partially obstructing the ureter. They were so large that I judged against vessel resection, and, instead, depended on nephropexy, combined with nephrostomy and a splint for ten days down the ureter. I retained the nephrostomy drain for seventeen months in all.

Evidently the left kidney excreted little or no urine, since none was passed and there was no left-sided pain at three months. On catheterization at this time there was only one ounce of urine in the bladder. However, at five months she was passing about 18 ounces per day naturally. At nine months I commenced spigotting the nephrostomy tube and noted that then the patient was passing up to 54 ounces of urine per day. Right retrograde pyelography now showed a fair, though not a wide, lumen at the uretero-pelvic region.

In February, 1946, I dilated the right ureter with a large catheter. This was repeated later, and in August a right retrograde examination showed a good opening. The nephrostomy tube was immediately removed and the fistula healed promptly. I did a check retrograde in March, 1947, finding quite clear urine, and a large catheter passed easily into the right kidney pelvis, from which urine drained under only slightly increased pressure. I advised repetition of the dilatation at yearly intervals, intending, if it gave trouble, to remove the left kidney later, but she returned to Wales.

She had no more pain on the right side, and the left troubled her much less, so, at two years from the nephropexy, she was an example of a good result in an operation which saved resection of enormous aberrant vessels. The nephropexy was the essential part of this operation, though the primary splinting and the long drainage were useful adjuvants.

**Case XVII.—Extremely Severe Ptosis in Solitary Left Kidney. Good Result.**

A female patient, aged forty-two years, had aching in the left loin for four months, worse on exertion and improved by rest. She had no vesical symptoms. The right kidney had been removed by me ten years earlier for calculous pyonephrosis. Excretion urograms showed that the left kidney fell about five inches in the vertical picture. A corset was tried for two years, but was very uncomfortable and quite ineffective. I saw this lady for the left-sided pain in September, 1942, and I certainly did not rush into the left nephropexy, for this operation was not done until September, 1949. Relief was immediate, after over seven years of aching pain, and the improvement has persisted without intermission ever since. She came to see me a couple of weeks ago in response to my letter, and reported all well, over five years after the operation on this solitary kidney.

This is a good example of relief of pain caused by a pure ptosis, with no complications at all, such as hydronephrosis or infection.

**Case XVIII.—Gross Kinking of Left Ureter, Not Shown in Excretion Urograms. Retrograde Pyelography Necessary to Complete the Diagnosis.**

A female patient, aged forty-nine years, saw me in October, 1949, with left loin pain for several months. There were cystic symptoms also, but no culture was obtained from the urine. Since the excretion urogram showed no abnormality, nothing was done for fourteen months, when persistence of symptoms made me do cystoscopy and a left retrograde examination. The bladder was normal. The left retrograde pyelogram showed gross kinking of the upper part of the left ureter. An emptying time estimation was made, which revealed, surprisingly, no retention, but, on the contrary, a painful renal hyperkinesia, with severe filling pain at three cubic centimetres. In December, 1950, I explored the left kidney and commenced denervation of the renal pedicle for the painful hyperkinesia, but stopped this procedure quickly, as I began to get bleeding from renal veins. Nephropexy alone was done, to straighten out ureteric redundancy. The patient was relieved primarily, but I have not seen her since. A letter was received in February, 1955, over four years since the operation, saying: "So far as the left kidney is concerned, I have been free of all pain. As regards the bladder all is well too. My local doctor tested the urine recently and found it normal."

There was very little ptosis in this case, but high suspension of the kidney relieved the pain from ureteric redundancy and kinking, which no doubt caused pain.

**Case XXVIII.—Bilateral Renal Ptosis Occurring Separately. Good Result on Both Sides.**

A young married woman, aged twenty-eight years, came to me with pain in the right loin radiating to the groin for three years. Her local doctor often found her right kidney low, mobile and tender, and had tried a corset for a long time. The pain made her feel very tired. She had diurnal frequency of micturition, but sterile urine. The excretion urograms in the upright position showed severe ptosis of the right kidney, but a high position of the left. The latter point is to be noted in view of subsequent happenings.

I saw her first in March, 1948, and the following month did right nephropexy. The immediate result was good, and two months later she reported that she felt very well and had put on weight. You may judge of my surprise when

she came to me seven months after the operation with dragging pain in the left loin and iliac fossa when up and about. This was relieved by rest. This left-sided pain had come on recently, fairly suddenly, and was not preceded by any unusual physical effort. It came amazingly out of the blue. Needless to say, we rushed to excretion urograms, and these showed that the right kidney was in good high position in the vertical picture, while the left organ had become dislocated downwards.

In December, 1948, I explored the left kidney and found it quite low. Left nephropexy was done and she was completely relieved by it.

In April, 1949, she had some aching in the right iliac fossa, but this disappeared a month later. In February, 1951, she complained of pain on the left side of the abdomen, with bowel symptoms and signs. Later, she developed cystic symptoms, apparently secondary to an inflamed left appendage. Excretion urograms done as a check at this time showed a descent of two inches in the right kidney, that is a little more than normal, and of only one inch on the left side, a little less than normal, and both kidneys emptied well. These troubles settled down with treatment by a general surgeon and a gynaecologist and I did not hear anything more of her till her answer to my query in February, 1955. Her reply was: "I do not have any pain from the kidneys at all. There is only occasionally slight frequency of the bladder from a misplaced uterus. I am very well, and a recent test of the urine shows it 100 per cent. clear."

**Case XXX.—Bilateral Ptosis with Aberrant Vessels on Each Side. Final Good Result.**

The patient was a woman, aged fifty-four years, and the final portion of her interesting history has just overlapped into the beginning of this year (1955).

In 1944 I resected an aberrant artery which was obstructing the left kidney, but did not do an associated secondary nephropexy, as the kidney did not seem low. One should remember in this connexion that even slight degrees of extra renal mobility can accentuate obstruction when any rigid bands of adhesions or vessels are present. She did well after this operation until 1952, when she began gradually to get pain in the right loin and iliac fossa, and also in the left loin. She put up with these troubles for two years and did not come to me about them till last year (April, 1954), when I made bilateral retrograde pyelograms. The right retrograde pyelogram showed slight hydronephrosis with an annular constriction just below the uretero-pelvic junction. The left retrograde examination showed no dilatation at all of pelvis or calyces, but there was an asymmetrical narrowing near the upper end of the left ureter. In May, 1954, I explored the right kidney and found an aberrant vessel crossing the ureter near the uretero-pelvic junction. This was resected and a one-stitch nephropexy was done. This was successful and she has had no more pain on the right side up to now, but the pain on the left side, the side of the original operation, persisted. A left retrograde pyelogram done near the end of 1954 showed a very narrow stricture, one centimetre long, near the upper end of the left ureter, with every appearance of intrinsic stricturing (Figure III). I dilated the left ureter twice, but with no relief, so decided at the beginning of this year to explore. There was no intrinsic stricture at all. The narrowing and the pain were caused by tight binding of the upper part of the duct to the medial aspect of the lower pole of the kidney. I simply released the ureter carefully by sharp dissection. A small nick was made in the renal pelvis, which was not at all dilated, and I passed a wide MacCormick dissector down into the upper ureter with ease. A single postero-inferior capsular mattress suture was brought up and out through the upper part of the *quadratus lumborum* muscle. This effectually lifted the kidney high and tilted its lower pole outwards. She has been completely relieved of her left-sided pain.

This, and similar cases I have experienced in the past, some in connexion with simple pyelolithotomy, lead me to the conclusion that the simple one-stitch nephropexy to tilt the lower pole outwards might be a valuable addition to our routine technique in such cases.

**Case XXXVI.—Ptosis Accompanied by Infection and Haematuria. Good Result.**

A woman, aged forty years, seen by me in April, 1948, complained of recent haematuria. She had had three attacks in seven years, and for the same period had suffered from dragging pain in the right loin, with anterior radiation. She had scarce pus cells in the urine and *Bacillus coli* on culture.

Excretion urograms showed right renal ptosis, and this was confirmed by a retrograde pyelogram.

I performed right nephropexy shortly afterwards, and she was discharged from hospital relieved of her pain. She was checked a few weeks later, the urine being sterile and pain still absent. I have not seen her since. Her reply to my present query is: "Thank you for your interest in my case. It is nearly seven years since the operation by you, and I am pleased to say that I have had no further trouble with the kidney or bladder."

**Case XXXVIII.—Ptosis Accompanied by Severe Psychotic Disturbance. Good Result.**

A woman, aged thirty-six years, was referred to me at the Royal North Shore Hospital in October, 1948, with severe pain in the right loin radiating to the umbilicus. It had been present for fourteen months, and was "knife-like" according to the patient, who made a lot of other exaggerated statements. Among her many complaints were severe headaches, fainting fits and palpitations. She did say, however, that her loin pain was relieved by lying down. The urine was clear, and the diagnosis of right renal ptosis seemed obvious by excretion urograms.

However, I sought a consultation with a physician, who considered her condition primarily an anxiety state, and judged her as psychologically unsuitable for operation. I therefore sought a psychiatrist's opinion. He also diagnosed an anxiety state, but his report read as follows: "This state has supervened on persistent pain. She has developed decreased tolerance to pain and excessive emotional reactions to any difficulty. As right nephropexy has been advised for the relief of pain, I definitely counsel this operation as soon as possible. No psychiatric treatment will avail until after the operation."

With this support I immediately did the right nephropexy, which was uncomplicated and straightforward. The immediate result was that the pain was relieved. The mental condition rapidly improved and further psychiatric attention was unnecessary.

In response to my query the other day, I got this reply: "I am very pleased to be able to state that the operation was a great success. Some months after the operation I started to gain weight and to enjoy good health, with no kidney pain. I have continued since then to enjoy good health and have had no bladder trouble whatever. The success of the operation is especially notable in view of the fact that I was seriously injured in a car accident in August, 1954, suffering pelvic injuries. During my three months' stay in Tamworth Base Hospital there were no kidney or bladder complications."

**Case XL.—Typical Uncomplicated Case, but with Unexplained Poor Result.**

The patient was a woman, aged forty years. I saw her in March, 1949, for a complaint of right loin pain for two years. It was worse on exertion and improved by rest. It was of a "gnawing type". The urine was sterile, but she had had attacks of frequency and scalding. Excretion urograms showed right renal ptosis. Nephropexy was done and she went out of hospital relieved, and I have not seen her since.

In response to my letter, her local doctor replied: "For some time she has had almost continual bladder discomfort and a throbbing pain in the right loin. A present catheter specimen shows no pus and the culture is sterile. Two and a half years ago she was investigated in hospital. Radiologically and endoscopically all was in order, and there was no obvious cause for her troubles."

I should like to see this patient again, and the case shows the need for year-to-year follow-up in many of these cases.

**Case XLI.—Very Thin and Worn-Out Patient. Final Good Result.**

The patient, a woman, aged thirty-four years, was in an extremely nervous state, and very thin and worn out when I saw her in March, 1949. For many years she had had a dragging pain in the right hypochondrium. It had got her very much down and was not improved by rest. Nevertheless I insisted on her having two weeks' absolute rest in hospital before I embarked on the right nephropexy. The urine was normal, and the diagnosis was made by excretion urograms. She was relieved at once by the operation.

I did not see her again, but got his letter in response to my query: "I have enjoyed very good health since the operation you performed six years ago, and have had no

trouble with either the kidney or the bladder. I have had two children since the operation, without any trouble in the kidney."

**Case XLIV.—Right Nephrophtosis Complicated by Bladder Dysfunction from Old Poliomyelitis. Moderately Good Result.**

This young woman, aged twenty-seven years, was an old poliomyelitis patient, and when I saw her in February, 1950, she complained of a constant aching pain in the right side, with vomiting, haematuria and occasional pyuria. *Bacillus coli* infection was present. Excretion urograms showed a drop of three inches on the right side; the left side was normal.

Right nephropexy was performed, and all went well afterwards as regards her right-sided pain, but post-operative retention of urine was extremely troublesome. At the end of three weeks of constant catheterization I succeeded in stimulating her bladder to function by using the old Marion trick of injecting an ounce of glycerine of boric acid into the emptied bladder. Unfortunately there was an increase in pyuria during this period.

She called on me in response to my letter and told me that for two years after the operation she had no trouble with the right kidney, but had had a lot of trouble with bladder retention on and off. Mr. Ian Potts has been looking after her at Sydney Hospital recently, and tells me that she now gets occasional attacks of pain in the right kidney which she attributes to a reflux up from the bladder. Mr. Potts has not been able to demonstrate this with opaque medium. Excretion urograms show the right kidney in good position. There is now some trouble with incontinence of urine. The patient tells me that in spite of these troubles the operation has succeeded in removing the constant ache she used to get in her right side.

**Case LV.—Male Patient with Aberrant Vessels. Later Spinal Cord Tumour. Poor Result.**

The patient was a male, aged sixty-two years. I saw him in March, 1946, for sharp pain in the right iliac fossa for about twelve months, and also for the same period pain in both sacro-iliac regions, worse on standing or sitting for long periods. The left kidney was congenitally absent. Excretion urograms showed ptosis of the right kidney.

In May, 1946, I performed right nephropexy by the one-stitch method as a secondary procedure to resection of an aberrant artery which was compressing the upper ureter. I did not see the patient since soon after leaving hospital.

He now writes: "After the operation the pain was subdued for some months, and then it became very intense, with loss of use of the right leg. At another hospital a spinal cord tumour was later diagnosed, and removed, with relief of pain and 50 per cent. improvement in the right leg. There is no kidney or bladder trouble now."

In spite of the presence of aberrant vessel and ptosis, and of the short temporary improvement, there seems little doubt that the spinal cord tumour was the cause of his symptoms, so I have put him down as a poor result.

**Early Post-Operative Results.**

The following notes give a clinical impression of the 56 patients in this series at periods of between six weeks and five months after operation.

At six weeks, 18 good results were observed, one fair (the patient still had cystitic symptoms) and one poor (no relief of renal pain).

At two months, 23 good results were observed, and three fair results ((a) cystitic symptoms remained, (b) the patient felt the need of extra support by a corset after the operation, and (c) post-operative retention was troublesome—poliomyelitis case).

At three months, six good results were observed.

At four months, two good results were observed, and one poor result (primarily good, but at four months the patient got cystitic attacks, with pain and tenderness on the right side from pyelonephritis).

At five months, one good result was observed.

Therefore, just about 86% of good results were obtained primarily.

### Late Post-Operative Results.

Letters were sent to every one of the 56 patients in this series. Replies were received from 33 patients. Change of address, death or just indifference probably accounted for failure to reply by most of the remainder.

A summary of these replies shows that good results were obtained in 22 cases. Moderately good remote results were obtained in six cases. A fair result was obtained in two cases, while poor results were obtained in three.

By adding together the good and moderately good results it will be seen that practical benefit was obtained in 84% of the patients who could be checked at long range.

Of the 33 patients who replied, 26 were checked at periods between two and nine years, two were early, being at six and eight months respectively, while the remaining five were at very long range, between ten and thirteen years.

I have made a paraphrase of each of the 33 replies received and have found them very interesting and instructive, but they would take up too much space if published.

### Conclusions.

Study of remote checks on this operation leads one to notice certain happenings.

Apparently in many cases there is a tendency towards infection of the bladder and probably also of the suspended kidney, especially if the patient indulges in over-exertion. I think that, in spite of 66% of really good results, and 18% of moderately good ones, I shall in future warn every patient against strenuous exertion.

I also think that, in addition to the usual clinical check one month after the patient leaves hospital, one should see the patient again at the end of a further month, for a clinical and urine cultural check. Moreover, I also intend to send for every patient at the end of one year from the operation, for clinical check with urine culture and excretion urograms, one picture in the upright posture.

Diagnosis should be more searching, especially in the direction of extraurinary tract sources of the pain and in the more extended use of retrograde pyelograms in the upright position; and in some cases in the use of estimation of kidney emptying time in association with the retrograde pyelogram.

The phenomenon of uretero-polar adhesion probably occurs more often than is generally realized and should be guarded against by outward splaying of the lower renal pole and interposition of perirenal fascia.

In this series the proportion of secondary nephropexies is low; but this very fact makes the analysis and follow-up in the cases of purely primary nephropexy of even more value than they otherwise would be. However, it now seems clear to me that in every operation in which the renal pelvis is opened, with possibility of urine escape and tissue reaction, a one-stitch nephropexy should be done as a secondary procedure to improve drainage and to guard against uretero-polar adhesion. Furthermore, draping of the lower leaf of the opened perirenal fascia over the renal lower pole should help further to prevent such adhesion.

In the period under review, quite a number of nephrostomies were done for various purposes, and this itself performs a nephropexy on the kidney, as well as splaying the lower pole outwards, but such cases have not been included in the nephropexy series.

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### Legends to Illustrations.

FIGURE IA.—Case XIX (not detailed in text): Excretion urogram for right loin pain, slight dilatation of right kidney pelvis and infundibulum, but no ptosis.

FIGURE IB.—Case XIX (not detailed in text): Right retrograde pyelogram (vertical posture). Ptosis with obstructive kinking of ureter.

FIGURE II.—Case XXII (history not detailed in text): Only very slight ptosis of right kidney; sharp angulation seen at uretero-pelvic junction is due to peripelvic adhesions. Uretero-ligation and one-stitch nephropexy done, with good remote result.

FIGURE III.—Case XXX: This case is detailed in the text. The apparent intrinsic stricture of the upper portion of the ureter is due to utero-polar adhesion and is extrinsic.

### PELVI-CALYCEAL CHANGES.<sup>1</sup>

By JAMES S. PETERS,  
Melbourne.

THE intention in this paper is to discuss mainly the changes which involve calyces, with particular reference to the single calyceal defect, and to illustrate the various factors concerned, with some reference to the corresponding management.

It is of course very difficult to exclude the pelvic, or indeed the lower urinary tract, changes, but, as the paper is short, the latter changes are neglected except in principle.

The reason for selecting calyceal defects for discussion is the frequency with which an excretion pyelogram is apparently normal apart from a calyceal alteration, a variation of size or shape or an absence of accurate filling detail, and this becomes particularly important in cases of recurrent infection and haematuria.

Calyces vary enormously; some are short and fat, others are long and thin, yet are perfectly normal. In other cases the same changes are evidence of disease and their interpretation is difficult. In many cases the accurate interpretation of these can be made only by correlating an exacting general clinical examination with detailed special tests, and correspondingly the management needs supportive general measures as well as detailed operative procedures. There are certain specific points concerning the pelvi-calyceal system which need review.

### The Histoanatomy and Physiology.

The pelvis has a layer of circular muscle fibres with its two longitudinal muscle coats. The calyces have one longitudinal and one circular coat. This circular coat is thickened and more pronounced at certain areas, such as the infundibulum and the pelvi-ureteric junction, giving rise to a form of sphincter. The lining of the pelvis itself is transitional squamous epithelium, and in the calyx the apex of the pyramid is covered by a tessellated cuboid form of epithelium.

Beneath the epithelium of the pelvis are a submucous layer and the tunica consisting of fine connective tissue with very few elastic fibres.

At the calyx the renal papilla projects nipple-like inwards towards the pelvis, and these projections may be multiple. At the apex are 15 to 20 foramina, the orifices of the papillary ducts from which the urine enters the calyx. The calyx then shares in the changes of the renal substance via the papillae, and the pelvi-calyceal system from mechanical obstruction.

### The Mechanism of Obstruction.

Briefly this mechanism of obstruction is similar throughout the urinary tract, the effects being recorded at all proximal parts. These lesions are single and multiple. They are single in the case of obstruction to the ureter with dilatation above of the ureter, pelvis, and calyces, but usually rare with obstruction at the bladder neck unless long delayed. But in congenital lesions the effects are multiple, as in the cases of narrowing of the "junction areas", seen more commonly in children, with obstruction

<sup>1</sup> Read at the annual meeting of the Urological Society of Australasia, Melbourne, March 8, 1955.

at the bladder neck, the uretero-vesical and pelvi-ureteric junctions. The calyceal changes vary; in some cases of ureteric obstruction the changes are more marked in the calyces; in multiple lesions the calyces are sometimes hardly changed except at a later stage. To consider some possibilities for the calyceal variation, it is necessary to review the mechanism of obstruction.

In cases of obstruction there is a change in the physiological as well as in the anatomical processes in the urinary tract. This change is in a state of flux, because in the case of the kidney renal function continues and there is perhaps a delay in the formation of urine, but not a complete suppression, and it is this interplay between excretion and absorption which allows the anatomical change of dilatation. The urine is delivered by several processes, filtration, secretion and muscular conduction.

Filtration is purely mechanical, being an interbalance between the hydrostatic pressure in the vessels and the tubular resistance in colloid pressure. The resulting pressure is usually about 30 millimetres of mercury. Obstruction, however, will increase the pressure within Bowman's space and decrease the effect of filtration pressure.

Tubular secretion is a much more active process and involves work from the cells. The proximal convoluted tubule is the portion where a large part is absorbed without regard to selective requirements, but the tubules also have the power of considerable secretory pressure. There is, however, the third condition of muscular conduction in addition to filtration and secretion. Urinary pressure is influenced by muscular activity and the secretory pressure is assisted by this peristaltic activity, which cannot continue indefinitely. However, we see in many cases of obstruction that peristaltic activity will increase the size and the length of the muscular components. When obstruction is permanent the process of kidney function is dependent on pyelo-venous backflow, and it is the fornix of the calyx which is the site of resorption. The pelvic epithelium of the transitional type suddenly changes at the edges of the papilla and becomes endothelium, and experiments have demonstrated that absorption can occur without actual rupture of the fornix. There is also a pyelo-lymphatic backflow in a hydronephrotic kidney—the lymphatics on section are usually highly dilated. As obstruction continues, the pressure, if unrelieved, will increase and a fornical rupture occur. This is the same type of rupture as we see in certain cases of retrograde pyelography, and there is a new formation of healing tissue in this area.

The pathological physiology in the case of obstruction to urinary flow shows firstly some degree of trauma, secondly hypertrophy of the conducting structures, and thirdly an atony of the conducting structures, with finally a parenchymatous degeneration of kidney tissue.

In certain cases repair may occur, and it is not unreasonable to suggest that calyceal changes are the result of some prior form of damage and that they have become scarred and healed of their own volition. It is also interesting to note that dilatation in the kidney pelvis and calyx is usually not severe with organic obstruction, but is more noticeable when the basic cause of obstruction is one of the so-called idiopathic causes—congenital lesions, poor design, high implantation, ureteric valves, aberrant vessels, or fibrous bars.

#### The Classification of Calyceal Lesions.

Calyceal lesions can be classified into the single and multiple forms.

##### Single Calyceal Changes.

Single calyceal changes are: (a) congenital, (b) inflammatory, (c) the so-called "unfilled" calyx, (d) renal papillary necrosis, (e) neoplasm, (f) cystic displacement, (g) the so-called hydrocalyx with or without stone.

**Congenital Changes.**—Lesions of the congenital type include the small long spider calyx of a malrotated kidney, the rotation calyx or a horseshoe kidney, the hydrocalyx

associated with ureteric duplication of bifid pelvis and in some cases the so-called single "hydrocalyx" which may be complicated by stone formation.

**Inflammatory Changes.**—The inflammatory single lesion may be acute pyogenic, but the more usual forms are in the multiple infective groups, which will be discussed later. The single inflammatory lesion which causes most worry is the tuberculous lesion. The lesion here is at the apex of the pyramid and renal papilla; renal tuberculosis is a blood-spread condition and the focal lesions are multiple. It is only at the papilla area, the so-called "delta" area, where the rate of flow is slow, that localization occurs, and the tubercle formation proceeds with a localized abscess and rupture of the calyx. This in turn produces in that calyx a generalized inflammation, which extends backwards by a lymphatic spread and also involves the pelvis with corresponding lymphatic spread throughout the kidney itself. These lesions are confusing, but the general interpretation further assists the diagnosis, and as tuberculosis is a reasonably common lesion I do not intend to discuss it any further in this short paper.

**The "Unfilled Calyx".**—The so-called "unfilled calyx" will be discussed later under "Management". The causes may be non-opaque stones, papilloma or angioma, or occasionally a small neoplasm, and their importance mainly relates to the accuracy of the special tests designed to fill the calyx.

**Renal Papillary Necrosis.**—Renal papillary necrosis is a necrotic lesion of the renal papilla which has usually been accepted as due to a vascular necrosis at the pyramid occurring mainly in diabetic patients. Many of the cases recorded show that the lesions are discovered post mortem and they are said also to be more evident in the severe form of diabetes. This condition as seen from the slide may involve several calyces, and clinically it is characterized by the passage of clots of blood which on section show a typical picture—a necrosis of the entire papilla due to a vascular thrombosis.

**Hydrocalyx.**—Hydrocalyx is more difficult to explain.

Hydrocalyx is associated with a contracted infundibulum. This may well be the result of scarring or stenosis due to infection, but it is possible that many cases are the result of a congenital dilatation, and their importance lies in that they are prone to calculus formation.

#### Multiple Calyceal Lesions.

Multiple calyceal lesions may be (a) congenital, (b) inflammatory, (c) polycystic, (d) neoplastic.

The multiple forms of congenital lesion which I have to illustrate are, I think, more commonly unilateral and they are extremely difficult to distinguish from the multiple inflammatory group and particularly those due to tuberculosis. However, in these cases that I have shown it is seen that the pelvic change is not very extensive, the calyces are dilated and clubbed, and the cortical width is diminished.

The second group of multiple calyceal lesions due to inflammation are more commonly associated with a generalized hydronephrosis and the other common forms of ulcero-cavernous tuberculosis. These again are more usual and I do not intend to discuss them.

In the changes with polycystic kidney there is said to be a typical form of the indentation of the circular cyst showing through an elongated calyx, but it is often found that there is a general spider form of pelvis and calyces, and I feel that the long attenuated calyces in the spider group are more commonly the result of polycystic disease than the so-called classic spider form due to neoplastic change in the kidney.

Similarly, in the multiple calyceal change group we have the gross distortion of neoplastic involvement of the kidney itself. Kidney neoplasms are more commonly at one or other pole; but as the process continues they extend through the kidney and involve many of the calyces, compressing or distorting them.

### Management.

The management in many cases is simple and obvious, but there are several points which warrant special mention. Firstly, there is the unfilled calyx—a diagnosis of unfilled calyx should, I think, not be accepted until detailed retrograde pyelography is performed. This entails considerable care and the use of a strong concentration of dyes, such as 20% sodium iodide, and a slow filling of the pelvis. Examination of the plates is necessary before proceeding to the next film; and tilting the patient to exaggerated positions, particularly the head downwards position, is helpful in many cases.

The further treatment of an unfilled calyx is determined by combining the general and the local features—for example, in a young adult with a fairly extensive bleeding and an otherwise normal kidney, and when diagnosis is probably a benign tumour, such as an angioma, it is better to be conservative; but in the cancer age group patients an unexplained defect with haematuria should, I think, be treated by adequate surgical operation.

Secondly, the hydrocalyx with stone presents a problem and it is difficult to decide treatment until the kidney is exposed. In these cases partial nephrectomy seems the most popular form of treatment, but I feel that in many cases it seems unnecessary if adequate preventive measures, such as prevention of infection, control of pH and dietary restrictions are followed. The reason for this suggestion is that in the pathology of the condition the associated pyelonephritis is due to a lymphatic spread from the pelvis and is generalized in the kidney, and is not located at the axis of the stenosed infundibulum.

The multiple calyceal changes comprise a very difficult group. The management here is conservative, but the lesion is congenital. As the patient gets older, the function becomes less and finally the condition passes to the stage of atonic dilatation. Delayed films will show a very slow emptying rate of the kidney and pain is persistent—a dull dragging pain which is distressing and difficult to relieve. In some cases the good kidney is enlarged by hypertrophy and the principle of counterbalance takes place. These patients in their forties carry a "seven-pound penalty" and the treatment is radical.

I hope to have shown by these series of X-ray plates some of the discriminating factors in diagnosis and management.

In conclusion I should like to emphasize the value of accurate special tests in the diagnosis of calyceal lesions, the principle that management be directed to ensuring a practical benefit to the patient and the giving of a thought to the physiology of obstruction and its application to the calyx, which is composed of conducting as well as functioning kidney substance.

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### RENAL CYSTS.<sup>1</sup>

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By G. R. DAVIDSON,  
Ballarat.

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ALTHOUGH touching on the subject of renal cystology as a whole, this short paper is mainly concerned with the consideration of so-called simple cysts of the kidney.

The study of renal cystic disease is difficult and confusing, mainly because of the obscurity that surrounds the pathogenesis and embryological development of the majority of these conditions. Examination of the literature clearly indicates the great diversity of opinion that exists regarding the aetiology of many of the cystic diseases of the kidney, and although the writings have been voluminous and the theories many, the subject is still a maze of urological uncertainties. Examination of any of the currently accepted classifications will demonstrate the confusion that exists.

<sup>1</sup> Read at the annual meeting of the Urological Society of Australasia, Melbourne, March 8, 1955.

The following classification by Ochsner (1951), while provided a good working basis, is on no more certain ground than any other.

- I. Congenital cysts:
  - A. Polycystic disease of the kidney.
    - (i) Unilateral.
    - (ii) Bilateral.
  - B. Simple serous.
    - (i) Large "solitary"—may be multiple: (a) no connexion with pelvis or calyces; (b) pyelo-genetic.
    - (ii) Calyceal.
  - C. Hemorrhagic.
    - (i) Spontaneous.
    - (ii) Traumatic.
    - (iii) With malignant disease.
  - D. Retention—small cysts of chronic sclerosing renal disease.
  - E. Secondary to other renal pathology.
    - (i) Infections.
    - (ii) Neoplastic.

White and Braunstein (1954) have made a considerable study of renal cystic disease and in a recent article have published a more satisfying classification:

- I. Congenital or developmental.
  - A. Polycystic disease.
  - B. Serous cysts (solitary, simple).
    - (i) Unilocular or multilocular.
    - (ii) Unilateral or bilateral.
    - (iii) Single or multiple.
  - C. Lymphatic cysts.
- II. Obstructive.
  - A. Diverticula.
  - B. Parapelvic.
  - C. Hydrocalycosis.
- III. Neoplastic.
  - A. Cystadenoma.
    - (i) Simple.
    - (ii) Papillary.
  - B. Cyst adenocarcinoma.
  - C. Angioma.
    - (i) Haemangioma: (a) capillary, (b) cavernous.
    - (ii) Lymphangioma.
  - D. Dermoid.
- IV. Vascular.
  - A. Haematoma.
    - (i) Spontaneous.
    - (ii) Traumatic.
  - B. Aneurysm.
  - C. Embolism.
  - D. Infarction.
- V. Inflammatory and infections.
  - A. Pyogenic.
  - B. Tuberculous.
  - C. Chronic nephritis.
- VI. Parasitic.
  - A. Echinococcus.
  - B. Tinea.
  - C. Trichina.

It is generally agreed that polycystic kidneys are congenital and are also dependent on a familial hereditary factor, being transmitted by defective genes. There is, however, considerable lack of agreement regarding the nature of the embryological fault.

There is no agreement at all about simple or solitary cysts. In general, it is thought that they are congenital or acquired or neoplastic in origin. Sixty years ago Hildebrandt (1894) evolved the theory that a failure of union between the filtration-secretory portion of the kidney derived from the renal blastema, and the collecting ducts, derived from the Wolffian duct, was the causal factor. Kampmeir (1923) observed renal cysts at a certain period of foetal development. Normally these cysts degenerate about the fourth month. Failure to do this may allow the eventual development of a cyst or cysts in later life.

The chief protagonist of the acquired theory is perhaps Heppeler (1930), who evolved the theory that as a result of localized tubular blockage and concomitant renal ischaemia, cysts would form. In support of this theory he was able experimentally, by blocking the tubules of a rabbit's kidney by cortical fulguration and by ligating a branch of the renal artery, to produce a cyst in the infarcted area.

A point claimed in favour of the acquired origin of solitary cysts is that they are nearly always encountered in adult life. However, White and Braunstein (1954) have criticized Heppeler's conclusions, stating: "We know that in the ordinary solitary simple cyst, neither the gross nor microscopic picture resembles that described by Heppeler in his *Experimental Cyst*". Meredith Campbell (1954) mentions that fourteen cases of solitary renal cysts have been reported in children and states that coexisting anomalies are frequent.

The matter is, of course, still unsettled, but I feel that it is quite possible that polycystic disease, solitary cysts and multilocular cysts are all congenital, having to each other perhaps the same degree of relationship that exists, for example, between simple and malignant hypertension — a relationship with a difference, so to speak, the difference being the presence or absence of an unknown factor or factors.

Professor W. K. Inglis, of Sydney (1950), has written a paper on neurilemmoblastosis in which he stresses the influence of intrinsic factor in disease when the development of the body is abnormal. He suggests that congenital polycystic disease of the kidney, cystic disease of the lung, and certain developmental abnormalities of the circulatory system, may possibly link up with neurilemmoblastosis, at the basic intrinsic factor level.

Multilocular cysts are usually considered to have the same aetiology as solitary cysts and it has been suggested by Lynch and Thompson (1937) that large solitary cysts are possibly the later stages of multilocular cysts whose walls and septa become obliterated, forming one large cavity.

Lymphatic cysts of the kidney are found in the hilus and resemble lymphatic cysts found elsewhere in the body. They are probably congenital.

The so-called obstructive cysts are not true cysts in so much as they communicate with the pelvis or calyces. They are better regarded as diverticula.

With the neoplastic group, as White and Braunstein (1954) have pointed out, difficulties are encountered again. Has the neoplasm developed in the wall of a preexisting cyst, or was the neoplasm the primary lesion? Although this question may not be answerable, the very fact that it can be asked has some bearing on treatment generally. In other words, if the association between malignant disease and cysts is admitted, conservative treatment such as the aspiration treatment advocated by Dean (1939) is surely contraindicated.

Dermoid cysts of the kidney are extremely rare. I feel that Omar Khayyám could have described them excellently and might well have written of the condition:

No flask of wine, no loaf of bread but, wow!  
A wisp of hair, a pair of teeth, and thou  
Slithering, in the wilderness inside me  
There's pathology now.

Regarding the so-called vascular cysts, the generally accepted opinion is that they are not true cysts. The majority of these haemorrhagic collections come from the rupture of a small parenchymal aneurysm or haemangioma.

In certain inflammatory diseases and in chronic nephritis, apparent cystic changes occur, but in the inflammatory variety the cyst wall is not epithelial in nature and is therefore not a true cyst. The cysts found in chronic nephritis are multiple and small and of no surgical interest.

Lastly we come to the parasitic group, and it can be at least said about them that they are the only cysts whose

family history and antecedents are not clouded by the bar sinister of aetiological uncertainty.

It is proposed to confine the rest of this paper to a discussion on solitary and multilocular cysts.

The incidence of both these conditions is not easy to estimate. In 1930, Heppeler collected 212 cases of solitary cysts, and Frazier (1951) has stated that among 8060 patients with urological conditions admitted to the New Haven Hospital, 52 cases of solitary cyst and two cases of multilocular cyst were encountered.

Multilocular cysts appear to be extremely rare, and only 31 cases (Frazier, 1951) have been reported in the literature.

This paper is based on five cases of solitary cyst and one multilocular cyst occurring in patients admitted to the Ballarat Hospital in the last eight years.

#### Pathology.

Solitary cysts most often occupy the lower pole of the kidney, next the upper pole and lastly the convex border or anterior surface. A true solitary cyst arises in the cortex near the surface and does not communicate with calyces or pelvis. It is a thin-walled cyst of variable size, lined by flattened cuboidal epithelium which secretes a clear amber fluid containing albumin, chlorides, phosphates, traces of urea and, sometimes, blood. In all cases that I have seen, the adjacent parenchyma has been compressed and thickened and the cyst wall very adherent to it. These cysts are usually seen in patients in the fourth and fifth decades, but not by any means always. The youngest patient in the series under discussion was a girl of seventeen years whose cyst in the lower pole was twice the size of the kidney.

#### Symptomatology.

It can be generally stated that kidney cysts produce symptoms because of their mass. Symptoms are rarely produced until the cyst has attained a size corresponding to the size of the kidney or larger. In the series under discussion, a dragging pain in one or other loin was encountered on four occasions, intermittent haematuria occurred with three others, and urinary tract infection with two.

To summarize, a study of the case histories of any series of renal cysts will indicate that the symptoms and signs most frequently presented are a mass in one or other flank, loin pain, sometimes haematuria and sometimes infected urine. Gastro-intestinal symptoms not infrequently occur, and if the cyst is of large size, pressure on the liver, lungs, or cardiovascular system can further complicate the picture.

It is worthy of mention that a solitary renal cyst has been reported as a cause of hypertension. Kreutzmann (1947) quotes two cases from the literature, and two more from his own practice, in which the removal of the cyst was apparently responsible for the lasting reduction of the blood pressure to within normal limits. He lays down certain basic essentials which he claims must be present before surgery for the relief of hypertension, due to any unilateral renal condition, should be considered:

1. We must be sure that the condition is not one of essential hypertension.
2. It must be realized that no reduction in blood pressure will occur if the affected kidney is functionless.
3. In all instances the arterial pressure must be persistently elevated.
4. The increased blood pressure should be of less than two years' duration in order to obtain a cure. However, in long-standing cases surgical operation may result in relief of symptoms or an arrest of the disease.
5. It is vital that the opposite kidney be normal.

#### Diagnosis and Treatment.

The diagnosis and treatment of kidney cysts sometimes tax the resources and ingenuity of the urologist. The solitary renal cysts can usually, but not always, be differentiated from renal tumours. Both are space-filling lesions

and both can produce a mass in a flank. It is impossible by palpation to decide between tumour and cyst on the basis of smoothness, nodularity or consistency of the mass. The history is not helpful because both conditions can produce very similar symptoms.

According to Hinman (1935), haematuria occurs in less than 10% in cases of cyst, while gross haematuria is the initial symptom in not more than 50% of cases of tumour. Plain films of the abdomen usually show a definite tumour shadow when the cyst is of any size, and very rarely does such a shadow show any evidence of calcification. The urogram may reveal evidence of pressure on the calyces or traction on one pole of the kidney. The pelvis is usually not deformed and it is uncommon for the ureter to be displaced to any extent unless the cyst is large. Quite frequently, however, there is no distortion of the calyceal pattern. Presacral perirenal insufflation may be helpful in upper pole cysts and also, as Ritches (1951) points out, the failure of the gas to outline the tumour area completely implies local fixity, a point in favour of tumour. As a general rule, aortography will provide accurate differentiation between cysts and cortical tumours. Edgar Burns (1953) states:

In the case of a cyst there is an obvious avascular area and the vessels are arranged in an umbrella pattern. In polycystic disease multiple areas of vascularity will be found. In tumours the nutrient artery is thickened and the area of tumour shows an irregular pooling of the medium in sinusoids.

Even with aortography, tumours which have undergone cystic degeneration may be extremely difficult to diagnose.

The majority of urologists do not seem to be enthusiastic about the diagnostic tapping of cysts or of radiological examination following the introduction of an opaque substance. In Prather's (1950) opinion, the only indication for needling is when a subcortical cyst is suspected but is not obvious at operation.

Of the diagnosis of multilocular cysts of the kidney, Truett Frazier (1951) remarks:

It is of interest to know that in none of the reported cases of multilocular cysts of the kidney was the diagnosis made pre-operatively in any age group.

In infants and children a diagnosis of Wilms's tumour was invariably made and in adults they are usually mistaken for hypernephromata.

It would seem apparent sometimes that, despite all our efforts, the diagnosis must be in doubt, and I feel that if that doubt exists, the answer should be supplied on the operating table.

My own views about treatment could be summarized as follows.

1. If a confident diagnosis of a cyst is made and the patient has no symptoms, interference is not indicated.

2. If there is evidence of a space-filling lesion, and the diagnosis is in any way uncertain, the loin should be explored.

3. If the loin is explored and a cyst is discovered at one or other pole of a functioning kidney, it should be dealt with by partial resection of the kidney, or by excision of the cyst and cauterization of the base. Carbolic acid, Zencker's solution, or 20% silver nitrate solution, can be used for cauterization. Light diathermic fulguration can also be used.

4. If the cyst is situated in the hilus region of the kidney, the method of excision and cauterization can be adopted. In one case of the series under discussion the base of the cyst was in such close proximity to the pelvis that it was felt it might be dangerous to cauterize. The base of the cyst was therefore dissected out and the hemorrhage controlled by a muscle graft sutured over the area. The ultimate result was satisfactory.

5. If a multilocular cyst is encountered, extirpate the cyst if possible. In the case reported here, it was possible to do a successful heminephrectomy. Most of the reported cases of multilocular cysts have been treated by nephrectomy. It would seem, however, as there is no evidence that

the condition is associated with malignant disease, that a more conservative approach is desirable, if the amount of functioning kidney substance renders it possible.

6. If a centrally located cyst is encountered and is of large size, nephrectomy is probably the wisest course to pursue, provided the other kidney is adequate.

7. If such a cyst occurs in a solitary kidney, puncture, decapping and cauterization may be attempted.

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Cystoscopy showed no abnormality in the bladder except, strangely enough, a small cyst in the mucosa just below the left ureteric orifice. Blood cells were found in the specimen taken from the right kidney, but not from the left.

Report on retrograde pyelography was as follows: "There is gross enlargement of the lower pole of the right kidney, which is rotating the upper pole and pushing two middle calyces. The lower calyx is absent apparently. Appearances suggest new growth or cyst." After excretion pyelography the following report was obtained: "Good kidney function both sides. Large round tumour in middle third of right kidney."

At operation the right kidney was exposed through the loin and the tumour was found to be a large multilocular cyst looking like a bunch of purple grapes, apparently growing from the inner border of the kidney, just below the hilus. The pelvis was reduplicated and there were two ureters which merged approximately opposite the lower pole of the kidney. Loculi of the cyst had extended posteriorly between the pelvis, pushing the two halves of the kidney apart. After most of the cyst had been cut away it was possible to remove the lower half of the kidney with its pelvis and the rest of the cyst. Unfortunately, the apparent rarity of the specimen was not appreciated at operation and the specimen was destroyed. The pathologist's report on the small remainder of cyst wall left at the base was as follows: "The remaining piece of cyst wall is lined by cuboidal epithelium, flattened in parts. There is atrophy of neighbouring renal parenchyma. Conclusion—Simple cyst of kidney."

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1. The classification of renal cystic disease has been discussed and some observations have been made regarding pathogenesis.

2. Mention has been made of the symptomatology and diagnosis of simple cysts of the kidney, and the indications for treatment in the various types have been outlined.

3. A case of a multilocular cyst of the kidney has been reported.

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## Reports of Cases.

### EXTENSIVE INJURY TO THE PENIS.<sup>1</sup>

By PAUL HOPKINS,  
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A, AGED twenty-nine years, was admitted to hospital at 7 p.m. on August 12, 1954, with the history that his shorts had been caught in a winch. On examination the skin had been torn from the penis and scrotum completely, the usual fringe of mucosa round the glans being left. Both testes were intact, but the cremaster muscle was torn off the left cord, the cord being left intact. The penile urethra was torn across about one and a half inches from the meatus; this was a complete transverse tear.

In the absence of a plastic surgeon for consultation it was felt that if flaps were turned from the thigh and sloughing occurred the result would be disastrous; also a flap does not adequately replace scrotal skin and the method used makes no difference to the testicular temperature problem.

General débridement and cleaning up were done, an adequate space was cleared on each side, tunnelling being

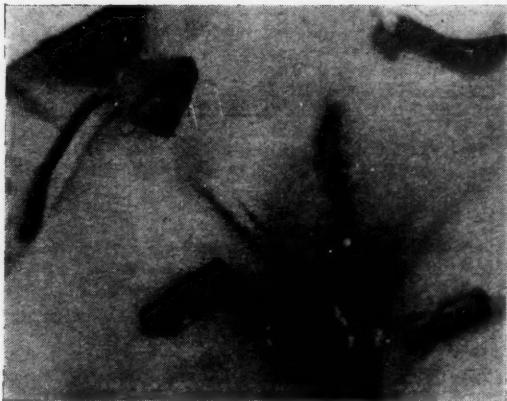


FIGURE I.

carried out from the original wound and close to the skin to keep the testis as cool as possible. The testes were placed in these cavities each to its own side and fixed with two nylon sutures to each side through the skin and tied over rubber. This was done to prevent retraction or torsion and it left each testis about over the femoral triangle.

The urethra was repaired and a small catheter was passed.

A tunnel was made from the original wound to the right just above Poupart's ligament and as superficial as possible, the penis was pulled out to its full length and measured and a small incision was made parallel to Poupart's ligament at that distance from the base of the penis. The glans was pulled through the incision and the mucosal fringe was sutured to the edge of the small skin incision (Figure I).



FIGURE II.

A suprapubic drain was placed in the bladder to the left side of the left rectus muscle to keep the urine away from the site of the injury. The skin edges of the original injury were brought together quite easily.

At the beginning of the repair the testes were placed in the wound and the skin was pulled across, but it was obvious that the repair would have been intolerable.

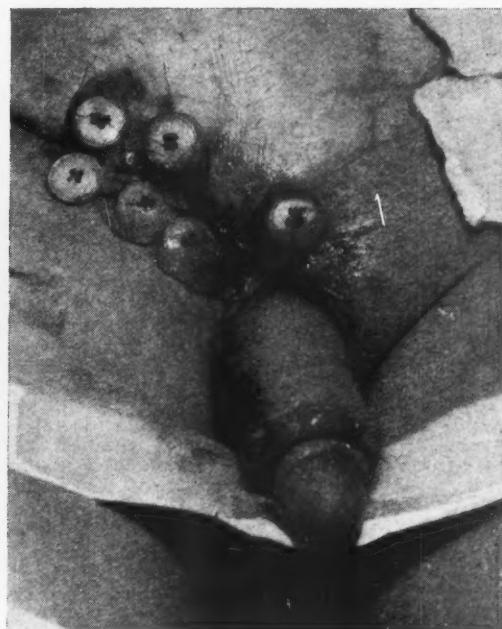


FIGURE III.

At this stage there were an indwelling catheter and a suprapubic drain. The wounds all healed well; the patient was not given antibiotics at this stage, as two years before

<sup>1</sup> Read at the annual meeting of the Urological Society of Australasia, Melbourne, March 9, 1955.

and both can produce a mass in a flank. It is impossible by palpation to decide between tumour and cyst on the basis of smoothness, nodularity or consistency of the mass. The history is not helpful because both conditions can produce very similar symptoms.

According to Hinman (1935), haematuria occurs in less than 10% in cases of cyst, while gross haematuria is the initial symptom in not more than 50% of cases of tumour. Plain films of the abdomen usually show a definite tumour shadow when the cyst is of any size, and very rarely does such a shadow show any evidence of calcification. The urogram may reveal evidence of pressure on the calyces or traction on one pole of the kidney. The pelvis is usually not deformed and it is uncommon for the ureter to be displaced to any extent unless the cyst is large. Quite frequently, however, there is no distortion of the calyceal pattern. Presacral perirenal insufflation may be helpful in upper pole cysts and also, as Ritchie (1951) points out, the failure of the gas to outline the tumour area completely implies local fixity, a point in favour of tumour. As a general rule, aortography will provide accurate differentiation between cysts and cortical tumours. Edgar Burns (1953) states:

In the case of a cyst there is an obvious avascular area and the vessels are arranged in an umbrella pattern. In polycystic disease multiple areas of vascularity will be found. In tumours the nutrient artery is thickened and the area of tumour shows an irregular pooling of the medium in sinusoids.

Even with aortography, tumours which have undergone cystic degeneration may be extremely difficult to diagnose.

The majority of urologists do not seem to be enthusiastic about the diagnostic tapping of cysts or of radiological examination following the introduction of an opaque substance. In Prather's (1950) opinion, the only indication for needling is when a subcortical cyst is suspected but is not obvious at operation.

Of the diagnosis of multilocular cysts of the kidney, Truett Frazier (1951) remarks:

It is of interest to know that in none of the reported cases of multilocular cysts of the kidney was the diagnosis made pre-operatively in any age group.

In infants and children a diagnosis of Wilms's tumour was invariably made and in adults they are usually mistaken for hypernephromata.

It would seem apparent sometimes that, despite all our efforts, the diagnosis must be in doubt, and I feel that if that doubt exists, the answer should be supplied on the operating table.

My own views about treatment could be summarized as follows.

1. If a confident diagnosis of a cyst is made and the patient has no symptoms, interference is not indicated.

2. If there is evidence of a space-filling lesion, and the diagnosis is in any way uncertain, the loin should be explored.

3. If the loin is explored and a cyst is discovered at one or other pole of a functioning kidney, it should be dealt with by partial resection of the kidney, or by excision of the cyst and cauterization of the base. Carbolic acid, Zencker's solution, or 20% silver nitrate solution, can be used for cauterization. Light diathermic fulguration can also be used.

4. If the cyst is situated in the hilus region of the kidney, the method of excision and cauterization can be adopted. In one case of the series under discussion the base of the cyst was in such close proximity to the pelvis that it was felt it might be dangerous to cauterize. The base of the cyst was therefore dissected out and the haemorrhage controlled by a muscle graft sutured over the area. The ultimate result was satisfactory.

5. If a multilocular cyst is encountered, extirpate the cyst if possible. In the case reported here, it was possible to do a successful heminephrectomy. Most of the reported cases of multilocular cysts have been treated by nephrectomy. It would seem, however, as there is no evidence that

the condition is associated with malignant disease, that a more conservative approach is desirable, if the amount of functioning kidney substance renders it possible.

6. If a centrally located cyst is encountered and is of large size, nephrectomy is probably the wisest course to pursue, provided the other kidney is adequate.

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FIGURE III.

At this stage there were an indwelling catheter and a suprapubic drain. The wounds all healed well; the patient was not given antibiotics at this stage, as two years before

he had had a serious injury and had had long courses of antibiotics.

By September 3 he had developed an abscess opposite and below the urethral repair. This was opened and drained, sounds were passed and the catheter was reinserted. This abscess held up further repair for several weeks.

On September 25 the catheter was removed and sounds were passed.

On October 12 the sinus was opened and packed with gauze. Healing occurred slowly. Acromycin was given.

On November 6 the second stage of operative treatment was undertaken. A plasticene model was made and covered with transparent plastic material; it was invaluable in working out the flaps.



FIGURE IV.

A rectangular flap was cut above and parallel to the penis, a small amount of subcutaneous fat being left. An incision was made about two-thirds of the way round the mucosa skin edge near the glans, a start being made above.

The penile body had been easily freed from the fat and the flap was pulled round it by four nylon sutures through the upper edge, and a needle was passed below the penis and up through the skin below the penis and tied over buttons. The mucosa of the glans was again closed to skin. Of the large bare area above the skin the edge was sutured to Poupart's ligament through buttons to prevent cutting in; this closed it quite a lot, and the remainder was packed with "Vaseline" gauze (Figure II).

At this stage the catheter was out and on occasional blocking or kinking of the suprapubic wound he could pass urine easily; a neat arrangement of a plastic covering of the dressings made this a simple, safe procedure. I was tempted to close the suprapubic wound at this stage, but was not courageous enough to do it.

He was given a course of acromycin to cover this. The wounds all healed very well. On November 15 most of the sutures were removed. On November 17 tension and all other sutures were removed.

This left the patient with the upper side of the penis covered by skin but still attached by a leaf of skin below.

On December 3, 1954, the third stage of operative treatment was undertaken.

A small rectangular flap was cut below the penis, the whole was swung over to the left and care was taken that the root of the penis was free of adhesions on the right side. The edge of this flap was sutured to the free edge of the upper flap covering the penis. The edges in the groin could be approximated under tension by the use of buttons. Sounds were passed. (Figure III).

This all healed quite well; there is some thickening underneath where the skin flap had the scar of the abscess, but this is subsiding very well.

On December 31, 1954, the suprapubic wound was closed and a Foley catheter was inserted.

On January 4, 1955, as the Foley catheter was uncomfortable it was removed and a small Coudé was inserted. Ten days later the catheter was removed.

On January 19 a 9/12 sound passed easily.

The patient is now up and around; there is a fair amount of hair on the flaps; if necessary this can be removed by electrolysis, but I propose to wait and see. (Figure IV.)

All the swelling is going down and the penis is fairly movable now and improving each day.

He was given stilbæstrol throughout to prevent erections, with occasional sedatives.

He developed two erections between stages 1 and 2; he rather wondered what had hit him, but strangely never realized what had happened. Morphine gave relief on each occasion.

#### SECONDARY CARCINOMA OF THE STOMACH SIMULATING A DISTENDED BLADDER.<sup>1</sup>

By PETER ROW,  
Brisbane.

A, a male, aged sixty-three years, was examined in the out-patient department of the Brisbane Hospital on May 26, 1954, at the request of a surgical colleague. The patient gave a history of hypogastric pain for eight days and had some difficulty in passing his urine. A previous history of dysuria for the last two years was also obtained. The lower part of his abdomen was visibly distended and one could palpate a large pyriform swelling arising from the pelvis and extending almost to the umbilicus. It was agreed that this tumour had exactly the consistency and shape of a distended urinary bladder. Rectal palpation disclosed a large "adenomatous" prostate gland. A diagnosis of chronic urinary retention due to an enlarged prostate was agreed upon and it was decided to have him admitted to a urology ward forthwith.

The patient was seen again the following day when he arrived in the operating theatre. He had been placed on the operation list for a suprapubic cystostomy by a resident medical officer and since last seen an unsuccessful attempt had been made to pass a catheter. At that moment a senior visiting surgeon chanced to arrive and he was invited to examine the patient. After a careful examination including rectal palpation of the prostate he agreed with the diagnosis and the proposed treatment. A blood urea level of 90 milligrammes per centum had been reported and the patient did not look at all well. It was therefore no trouble to resist any temptation to perform immediate prostatectomy.

On August 28, 1954, the urethral catheter was removed, and on the following day all sutures were removed.

<sup>1</sup> Read at the annual meeting of the Urological Society of Australasia, Melbourne, March 9, 1955.

A spinal anaesthetic was administered and the bladder wall carefully exposed through a short mid-line incision. It looked a rather "sick" bladder wall. Stay sutures were inserted and it was carefully incised. At least three pints of blood-stained "urine" were sucked out. A considerable quantity of blood clot was next removed, followed by a lot of material resembling necrotic papilloma. The next surprise was some rather brisk bleeding, but the climax was not reached until a loop of small intestine presented in the wound.

Anaesthesia was deepened and the incision was extended, a transfusion of blood was commenced, and the abdomen was explored. Finally the specimen exhibited was removed after a partial gastrectomy had been performed. The specimen consists of a segment of stomach containing on its greater curvature a carcinomatous ulcer two centimetres in diameter. Contiguous with the piece of stomach is a large fleshy tumour involving the greater omentum and transverse mesocolon. This tumour, which was at least as large as a Rugby football, had extended into the pelvis and simulated a distended bladder. The smaller specimen is a length of transverse colon which was involved. It required exteriorization and removal.

Dr. T. H. Vickers, who examined the specimens, reported:

The growth in the stomach wall is poorly differentiated and actively growing adenocarcinoma, the structure of which is compatible with an origin in gastric mucosa. The intraomental mass is a metastasis of this tumour. It is largely necrotic but still contains areas of viable neoplastic tissue. If the peritoneal cavity was soiled when the lesion ruptured it is extremely likely that peritoneal implants of the growth will develop.

The patient did reasonably well for about three weeks. He had been placed on a normal diet and his colostomy spur had been crushed. He then became progressively cachetic and anaemic. Death occurred on the twenty-ninth post-operative day. Permission was not obtained for an autopsy.

This case is presented as another example of the surprise which may be in store, even during a simple operation like suprapubic cystostomy.

## Reviews.

**Varicose Veins; Phlebitis, Leg Ulcers, Dropsy, Eczema, Hemorrhoids.** By R. Rowden Foote, M.R.C.S., L.R.C.P. (London), D.O.B.S.R.C.O.G., F.I.C.S.; 1954. London: Gerald Duckworth and Company, Limited. 7½" x 5", pp. 110, with 16 illustrations. Price: 8s. 6d.

THIS book is one of the Modern Health Series which are written to inform the lay public in simple but accurate language something about the diseases from which they may happen to suffer. The author estimates that 10% or five million of Britain's population have varicose veins, and he states that the cause of varicosity is due to the assumption by man of the erect posture, as it is not found in quadrupeds. Details of the current methods of treatment, whether conservative, by injection, or surgical, are described, as also are some rather terrifying older methods such as the Rindfleisch-Friedel operation. The topic of varicose ulcers is also covered and a brief chapter is devoted to hemorrhoids. All practising doctors will not agree with some of the text, but in such a work as this, the essential is to express the theme simply. This book does just this. Like most works of this type, it will prove of value for intelligent patients who can assess the subject matter, and doctors could benefit by having a copy to lend to such of their patients who may be unfortunate enough to have "haricot" veins.

**Approach to Clinical Medicine.** By R. H. Micks, M.D. (Dublin), F.R.C.P.I.; 1955. London: J. and A. Churchill, Limited. 7½" x 5", pp. 144. Price: 8s. 6d.

PROFESSOR MICKS'S small introduction to clinical medicine originally appeared as stencilled sheets for his students, and it would seem that, bearing this in mind, the publishers have aimed mainly at producing a cheap handbook for students. Hence there are no illustrations, no tables, and the whole text has the appearance of having been transcribed

straight from the roneoed sheets. In the preface, it is stated "the points selected for inclusion are those which experience has shown to be usually very imperfectly learned, and some points of importance have been deliberately omitted because they are almost invariably picked up and remembered without any special effort at systematic learning". Thus it can be seen that to some extent the book lacks completeness. Certainly the subject matter is clearly and dogmatically presented, but this has been done previously elsewhere in a more complete fashion, and while the book may be popular in Dublin where the author teaches, it is hard to see it replacing other well-known books on the same topic.

**The Year Book of Dermatology and Syphilology (1954-1955 Year Book Series).** Edited by Marion B. Sulzberger, M.D., and Rudolf L. Baer, M.D.; 1955. Chicago: The Year Book Publishers, Incorporated. 8" x 5", pp. 472, with 59 illustrations. Price: \$6.00.

FOLLOWING their custom for many years, the editors of this Year Book, Marion B. Sulzberger and Rudolf L. Baer, start the current volume with a special article prepared by themselves. This year their subject is some recent advances in dermatological mycology, and they deal in particular with *tinea pedis*, *Trichophyton rubrum* infections, *tinea capitis* and moniliasis.

The opening section of the material abstracted from current literature deals with treatment and prevention, referring in turn to endocrine therapy, physical therapy and other therapy. Then follow sections on eczematous dermatitis, atopic dermatitis, urticaria, and allergy, on drug eruptions, on miscellaneous dermatoses, on cancers, precancers and other tumours, on fungous infections, on other infections and infestations, on venereal diseases and their treatment (exclusive of gonorrhoea), on investigative studies and on miscellaneous topics.

The section on investigative studies is long and indicates clearly the scientific background of the best of modern dermatology.

**The Visual Fields: A Study of the Applications of Quantitative Perimetry to the Anatomy and Pathology of the Visual Pathways.** By Brodie Hughes, M.B., B.S. (London), Ch.M. (Birm.), F.R.C.S. (England); 1954. Oxford: Blackwell Scientific Publications. 10" x 7½", pp. 184, with 158 illustrations. Price: 35s.

In this book Brodie Hughes applies the methods of perimetry so ably outlined by the late H. M. Traquair in his "Introduction to Clinical Perimetry". In the preface the author gratefully acknowledges his indebtedness to Traquair, one of the immortals of British ophthalmology.

This is a book of great value to the ophthalmologist and neurologist. It is only the clinician who explores the visual fields himself who realizes the full value of a carefully plotted field. With this approach, which is that of Traquair, Brodie uses the fields from more than one hundred of his own cases to illustrate the technique of quantitative perimetry and its anatomical and pathological implications. The account of the anatomy of the visual pathways includes the findings of recent research into the distribution of the visual fibres. The postulates of Posner and Schlossman on the radiation of the fibres from the central area of the retina and their mode of entry into the papilla shed a little more light on the interpretation of the field in glaucoma and revive interest in a subject tending to become static. Brodie's careful work indicates that there is still much to be elucidated and confirmed in the anatomy and pathology of the visual pathways and that many firmly entrenched opinions such as that of the mechanism of the common homonymous hemianopia of old age "are not confirmed by post-mortem studies". In the final pages he makes a plea for the more careful use of the methods of quantitative perimetry. Many cases of central scotoma with optic atrophy will yield up their secret if the field is adequately explored. It is not difficult to agree with him in this and to add that they will not do so if the examination is left to the nurse or receptionist.

This book cannot be praised too highly. It might well be described as an appendix to Traquair.

**Neuroglia Morphology and Function.** By Paul Glees, M.A., D.Phil.; 1955. Oxford: Blackwell Scientific Publications. 8½" x 5½", pp. 124, with 44 illustrations. Price: 25s.

SUCH a book as this has long been needed. For the first time most of the available information on this important subject is presented in its own right in a compact form, and

by a writer particularly well qualified for the task. Dr. Glees tackles the problem of the neuroglia in a way which discloses both an easy familiarity with the subject and a mastery of the rather difficult techniques required in this work. He treats neuroglia under the two major headings—macroglia and microglia. Macroglia comprises protoplasmic and fibrous astrocytes and oligodendroglia. It is pointed out that all three have much in common, such as an ectodermal origin, a varying number of processes and the possession of gliosomes, but that their relative abundance differs in different parts of the central nervous system. Glees evidently favours Held's opinion that macroglia is more than a mere "nerve glue" and agrees generally that the vascular "sucker feet" and the presence of gliosomes (which may be of a secretory nature) indicate an additional "metabolic" function. The author rejects the views that the macroglia forms a syncytium or that it has any direct nervous activity, but he entertains the possibility that the cells of the macroglia may be the source of secretions required for synaptic transmission as envisaged by the humoral theory. He considers that the "sucker feet" on the intraneurial capillaries form such a close investment that they may represent the physical basis of the blood-brain barrier. The author's belief in the reality of perivascular (Virchow-Robin) spaces, and his opinion that the subpial (Held) and perineuronal spaces are probably artefacts, have recently been upheld by the work of Woollam and Millen. The discussion of microglia is briefer but adequate. After presenting the various conflicting opinions Glees evidently inclines to a mesodermal origin as postulated by Hortega, Penfield and others, and since supported by the work of Field. The phagocytic function, varying morphology and relationship to Gitterzellen are all briefly considered and there is a short note on tissue culture. The book is well produced and the style is clear for the most part. An occasional sentence needs careful reading and some "continentalisms" such as "protoplasmatic" and "cytoplasmatic" creep in. There are also a few typographical errors; for example, on page 92 "explanations" instead of "explanations". But these are minor blemishes in an excellent survey which should be read by everyone interested in the central nervous system.

## Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Antibiotics Annual, 1954-1955: Proceedings of the Second Annual Symposium on Antibiotics", edited by Henry Welch, Ph.D., and Félix Martí-Ibáñez, M.D.; 1955. New York and London: Interscience Publishers, Incorporated. 10" x 6", pp. 1164, with many illustrations. Price: \$10.00.

Contains 174 different contributions. The symposium was held in October, 1954.

"World Distribution of Spirochetal Diseases: 2. Relapsing Fevers, Louse-borne and Tick-borne: Basic Sources", by the Department of Medical Geography, American Geographical Society; 1955. New York: American Geographical Society. 38" x 25". Price: \$1.25 foiled. \$1.50 flat.

This is Plate 16 of the series of atlases.

"The Zoonoses in Their Relation to Rural Health", by Karl F. Meyer; 1955. California: University of California Press. 9½" x 6", pp. 54, with nine illustrations. Price: \$1.00.

A paper read at the technical discussions of the seventh general assembly of the World Health Organization, 1954.

"Thoracic Surgical Management", by J. R. Belcher, M.S., F.R.C.S., and I. W. B. Grant, M.B. (Edin.), F.R.C.P. (Edin.); with a foreword by Sir Clement Price Thomas, K.C.V.O., F.R.C.S.; Second Edition; 1955. London: Baillière, Tindall and Cox. 8" x 5½", pp. 224, with 78 illustrations. Price: 21s.

It is assumed that the reader is ignorant of the various procedures described.

"The Mentally Retarded Child: A Guide for Parents", by Abraham Levinson, M.D.; edited with a preface to the British edition by Kay McDougall; introduction by Pearl S. Buck; 1955. London: George Allen and Unwin, Limited. 8½" x 5½", pp. 128. Price: 12s. 6d.

The book has been prepared under the auspices of the Dr. Julian D. Levinson Research Foundation.

"L'Homéopathie", par Pierre Vannier; 1955. Paris: Presses Universitaires de France. 7" x 4½", pp. 136. Price:

An historical and critical evaluation of homeopathy, concluding with an assessment of its present position in medical practice.

"Morality Fair: Vagaries of Social Conduct as Reflected in the Press", by Geoffrey Williamson; 1955. London: Watts and Company. 8" x 5", pp. 274, with many illustrations. Price: 15s.

A survey of the changed attitude of the Press.

"Tell Your Child the Truth: A Practical Guide from the Pre-School Child to the Adolescent"; foreword by Professor Harvey Sutton, O.B.E.; 1955. Sydney: Father and Son Welfare Movement of Australia. 7½" x 5", pp. 40. Price: 2s. 6d.

Practical advice to parents in four parts: "Sex Education and the Parent", "The Nursery Years", "The Primary School Years", "Puberty and Adolescence".

"Before and After Childbirth: Ante-natal and Post-natal Exercises", by Jane Madders, M.C.S.P., Dip.Phys.Ed.; photographs by Lisel Haas; 1955. Edinburgh and London: E. and S. Livingstone, Limited. 5½" x 8½", pp. 32. Price: 3s.

Illustrated exercises for which full directions are given. The book is intended for the use of patients.

"Modern Apparatus for Sterilisation", by J. H. Bowie, M.B., Ch.B., M.R.C.P.E.; an address given to an evening meeting of the Pharmaceutical Society of Great Britain in Edinburgh on February 16, 1955; 1955. London: The Pharmaceutical Press. 8" x 5½", pp. 24, with 11 illustrations. Price: 2s. 6d.

This is reprinted from *The Pharmaceutical Journal*.

"Sexual Offenders", by Norwood East, M.D., F.R.C.P.; with extracts from the "Psychological Treatment of Crime", by East and Hubert; 1955. London: Delisle, Limited. Sydney: Father and Son Welfare Movement of Australia (distributors). 7½" x 5", pp. 102. Price: 15s. 6d.

Intended for the general reader.

"Clinical Toxicology", by Clinton H. Thienes, M.D., Ph.D., and Thomas J. Haley, Ph.D.; Third Edition; 1955. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 8" x 5½", pp. 458, with 16 illustrations. Price: 71s. 6d.

Intended to be a classroom text and a guide for the general practitioner.

"The Physician and the Law", by Rowland H. Long, with a foreword by Milton Helpern, M.D.; 1955. New York: Appleton-Century-Crofts, Incorporated. 8" x 5½", pp. 298. Price: \$5.75.

Designed for the use of physicians, "but lawyers may also find it helpful".

"Pediatric Clinics of North America: Symposium on Pediatric Urology"; 1955. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 9" x 6", pp. 284, with 50 illustrations. Price: £6 15s. per annum.

This number consists of a symposium on paediatric urology. There are twenty contributions by twenty-eight authors.

"Counseling in Medical Genetics", by Sheldon C. Reed; 1955. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 8" x 5½", pp. 276. Price: 40s.

The purpose of the book is "to help the physician answer his patient's questions concerning heredity".

"German-English Medical Dictionary", by W. O. Goulden, B.A. (Hons.), Dr.Phil.; 1955. London: J. and A. Churchill, Limited. 8" x 5½", pp. 520. Price: 45s.

The dictionary includes 50,000 expressions, primarily of a medical nature. The German type is not used.

"Growth at Adolescence", by J. M. Tanner, M.D., Ph.D., D.P.M.; 1955. Oxford: Blackwell Scientific Publications. 8½" x 5½", pp. 224, with 68 illustrations. Price: 32s. 6d.

The book is intended for medical students and their pre-clinical and paediatric teachers, to biologists, anthropologists and physicians concerned with children and adolescents.

## The Medical Journal of Australia

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SATURDAY, DECEMBER 3, 1955.

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*All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.*

*References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.*

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### UROLOGY AND ITS PRACTICE.

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THE papers published this week, read earlier in the year at a meeting of the Urological Society of Australasia, are a reminder at once of the diverse conditions which urologists are called upon to treat and of the highly specialized nature of the treatment which they have to adopt. Although Francisco Diaz, who published the first treatise on diseases of the kidney, bladder and urethra in 1588, is said to be the founder of urology, the specialty as we know it today has developed rapidly since the introduction of the cystoscope and the perfection of radiological methods of examination. Those who were medical students in the early years of the century can recall how the sedate seniors of the day tried their prentice hands and eyes on attempts to attain efficiency. "Cystoscopic examination" was an event on the surgical operation list, but nobody but the surgeon saw anything—it was presumed that he did. At least one publication on the subject appeared in Australia and coloured illustrations, of doubtful value, were included. However, interest did not wane; one enthusiast followed another, apparatus was perfected, auxiliary aids, especially from the biochemist, were developed and little more was needed. In Australia Sydney developed first as a urological centre. Urology in this city owes much to the work of two men—S. Harry Harris at Lewisham Hospital and R. Gordon Craig at the Royal Prince Alfred Hospital. Craig's department of

urology, started by his magnificent donation of £20,000 (it would be worth probably £50,000 today), meant that there could be no looking back.

It so happens that there has recently appeared what is called a "Collective Review" entitled "Urology—from 1905 to 1955".<sup>1</sup> The author is Charles C. Higgins, of Cleveland, Ohio. This review is worthy of the attention of all interested in the subject. They should be warned, however, that the review is concerned almost entirely with American literature. Of 368 references less than a dozen are to British or Continental writings; there are none to Australian sources. Even Millin's retropubic operation is not referred to its original journal source, but to a text-book. This is a pity. The author may have been in a hurry because he has between 70 and 80 references to authors "cited by H. H. Young"—the original source is not given. For all that the review is full of interest. He observes quite early in his statement that it is a mistake to think of modern urology as a development merely of the past fifty years—the half-century before 1905 saw developmental progress "just as striking as that of the immediate past". He likens that period to the learning and growth of early childhood, which "organically is the most rapid of all"; the period 1905 to 1955 is to him the period of adolescence. If this is a correct assessment (and there is no reason why it should not be), then we must conclude that in the full flower of its manhood urology will see much greater manifestation and development. Higgins thinks that the reviewer who will cover the field of urology in the centennial year of *Surgery, Gynecology and Obstetrics* "will feel that we today were working almost completely in the dark in relation to knowledge he will then enjoy". At the same time there will be many problems still to be solved fifty or a hundred years hence.

The most important discussion at the meeting reported in this issue was on morbidity following prostatectomy. The three types of operation discussed by Richard Harris, Henry Mortensen and Keith Kirkland were suprapubic prostatectomy, transurethral resection and retropubic prostatectomy. Higgins, in his review, mentions at some length a fourth method—perineal prostatectomy. This method is seldom used in this country. G. R. Davidson was, of course, right when he declared that it should be the aim of every urologist to achieve both zero mortality and zero morbidity. He went on to remark that if an operation was basically sound it could be claimed that the subsequent morbidity varied inversely with the skill and experience of the surgeon. From this it follows that the surgeon will use the type of operation which gives him the best results and is of most comfort to his patient. Higgins expresses this by observing that "the operative technique to be utilized will be influenced by the surgeon's training, his experience, and the results achieved by himself and others with the various types of operation". Higgins unfortunately is rather sketchy and incomplete in his descriptions of the various types of operation. His review of the suprapubic operation carries him only as far as 1917, and in his comparative descriptions he deals with it only as a two-stage procedure. This gives an entirely wrong impression, but later on he states that the majority

<sup>1</sup> *Surg., Gynec. & Obst.*, July, 1955, International Abstracts of Surgery, July, 1955.

of surgeons still prefer suprapubic prostatectomy, "usually a one-stage procedure". In regard to the Millin operation Higgins is probably right when he states that longer experience and statistical studies will decide whether the Millin operation "will become more popular or replace the suprapubic procedure". Nowadays every surgeon who operates on the urinary tract knows that certain tests of renal function are essential to success, and Higgins makes a good point when he reminds us that fifty years ago these tests had not been devised. This brings us to the most important point, that zero morbidity and zero mortality are not likely to be achieved in prostatic surgery unless the patient seeks advice at an early stage in his disability. It is here that the results of renal function tests may come to the aid of the medical attendant if the patient is recalcitrant.

Not the least important communication at the Sydney meeting was the account given by James Mortensen of observations made by him in overseas clinics. His reference to adrenalectomy in malignant disease of the prostate should be noted. He points out, as others have done, that the results with carcinoma of the prostate when compared with those for carcinoma of the breast are "unpredictable". Higgins states that work on this subject is being carried on and that it is being augmented by research on animals. It is important that pain is relieved by removal of the adrenals; if we knew why this happens and why the pain sometimes recurs with signs of "resistance" to oestrogens we would be nearer to the unravelling of the mystery. All that can be said at present is that whenever adrenalectomy is undertaken the fullest possible biochemical and endocrine study of the patient should be made and the results recorded. In a wealth of evidence some new point of departure in investigation may be discovered. A "relatively recent" development in radiological diagnosis is mentioned by Higgins; this is pneumostratigraphy in which air insufflation methods are combined with tomography. Both air insufflation and tomography are used in this country, but so far as can be discovered, the two have not been combined. The application of pneumostratigraphy to urological diagnosis was reported in Italy in 1953 by Camerini and his associates—the bladder walls were studied after extraperitoneal air injection by an anterior prevesical approach. Higgins writes that "an advantage of this combined technique of studying the bladder wall and demonstrating the extra-vesical spread of tumors is the almost complete elimination of gas and opaque shadows due to superimposed intestinal contents or insufflated air".

From the foregoing it should be clear that the urological papers published in this issue deserve the careful attention of practitioners. A great deal of the ground covered by Higgins has not been considered—the subject is too vast and those who are interested can study it for themselves. What has to be remembered by all practitioners, even by urologists themselves, is that the successful treatment of diseases of the kidneys and urinary tract demands intense study and minute attention to detail. Urology is not given over wholly to the performance of surgical operations—much more than what has facetiously been called plumbing is needed. That is why we refer preferably to urologists and not to urological surgeons.

## Current Comment.

### INFECTIOUS HEPATITIS IN INFANTS.

GRADUALLY knowledge about the problem of infectious hepatitis is growing. Among the important facts emerging is the not uncommon occurrence of non-icteric disease and its possible relationship to chronic liver damage. For many years clinicians have been aware of and puzzled by children in whom progressive liver damage was occurring and in whom there was no clear evidence of the cause. Richard B. Capps<sup>1,2</sup> and a group of associates from Chicago and Philadelphia have recently made a very important contribution by their study of the disease in an orphanage. In 1952 these workers published an epidemiological study from this orphanage. They demonstrated that there was a high incidence of typical infectious hepatitis with jaundice among the new student nurses coming to work in the orphanage. They obtained conclusive evidence that the disease was endemic amongst the infants and that they were responsible for the infection of the nurses. They found evidence of the disease among the infants, both clinically and by laboratory investigations. In only one child of the many infected did jaundice occur; but the nature of the infecting agent was demonstrated by short incubation periods, and by proof of the occurrence of the virus in the faeces of two infants by the oral administration of stool preparations to adult volunteers, who after a short incubation period developed typical infectious hepatitis.

The study covers about four hundred infants, who during a twenty-one month period remained in the institution for three weeks or more and were suitable for study. Laboratory tests were carried out on about three hundred of these. A large number of the subjects were observed with abnormal clinical and laboratory findings suggestive of hepatitis. In some these were transitory, and for the purpose of their present paper the writers have selected thirty-six children in whom the evidence of the disease was convincing. They were chosen primarily on the basis of marked and persistent abnormalities in results of the liver function tests. In all cases at least three different tests gave positive results for a period of four weeks or longer. In most cases at least five tests gave abnormal results and continued to do so for several months or more. Only one child developed a rise in serum bilirubin content and jaundice. In the other cases the symptoms that occurred were loose stools, unexplained fever, failure to gain weight, light coloured stools, anorexia, respiratory symptoms, lassitude, abdominal distension, and in a few vomiting. These symptoms were not all present in any one case as a rule and occurred with decreasing frequency in the order given. Four of the thirty-six patients were asymptomatic. Twenty-six patients showed some alteration in liver size. Although these children were never acutely ill and did not show jaundice, in some the disease ran a very prolonged course. The results of liver function tests remained abnormal and health remained normal for long periods. In two infants virus was demonstrated in the stool by oral feeding to adult volunteers, in one case five months and in the other fifteen months after the onset of illness in the child.

In many ways this is an interesting and important report. It is probably the first time that this disease without jaundice has been reported in a large group of infants. It seems almost certain that many more of the children in this institution were infected, for many had abnormalities of liver function test findings, though the abnormality was less convincing than in the group reported. Particularly striking is the tendency of the disease to run a long course in this particular group. The authors suggest the possibility that this was because new susceptibles were constantly being admitted to infected wards and becoming infected themselves. These newly infected children were

<sup>1</sup> Arch. Int. Med., 1952, 89: 6.

<sup>2</sup> Am. J. Dis. Child., June, 1955.

continually providing a fresh source of virus which might rekindle smouldering or convalescent cases. Intercurrent infections were common and these, too, may have helped to maintain the disease process. Rest was often inadequate in these small patients, particularly when the diagnosis was difficult or delayed because of the lack of symptoms. It is possible that in the mild non-icteric case there is poor antibody formation, and this is particularly likely to be so in the infant, and this, too, may have increased the duration of the illness.

Whatever the answer to these questions, it is clearly important to know that infectious hepatitis can occur in a mild non-icteric form in many young children and infants, that the disease is likely to run a long course and may perhaps go on to chronic liver damage, and, perhaps most important of all, that these children can remain fecal carriers for a surprisingly long period of time.

#### MEN AND MICE.

RESEARCH into the virus diseases is going on so fast that even the most advanced laboratory workers can hardly keep up with week-to-week developments, and the general practitioner must feel at times that he is being left hopelessly behind. Gilbert Dalldorf<sup>1</sup> has something to say on this subject—his paper on the newer knowledge of the virus diseases is rather philosophical than technical, and presents an old piece of sound clinical wisdom in a guise suited to the new march of events. It has always been necessary to remind ourselves, over and over again, that laboratory tests are of value in confirming and extending diagnosis, but that they can never take the place of careful clinical examination. In connexion with the vast scope of the abstruse data now being collected about viruses, Dalldorf points out that the response of man to a virus infection is just as characteristic of that virus as any of its properties that can be observed in a laboratory, and reminds us that there is more to be seen and learned from the patient than from the mouse, and certainly much more than from a tissue culture.

Viruses are notoriously capricious in their effects. They wax and wane in their virulence, and many appear to have the most obscure and paradoxical epidemiology—although it is possible that this is due to the impossibility of recognizing subclinical infections. Virus epidemics come in waves, or scattered cases occur, with often more than one variety at once. The clinician may be handicapped by his not seeing enough cases at one time to enable him to establish for himself a recognizable pattern for future reference, but he cannot possibly miss the fact that he is dealing with a virus—the moderate rise of temperature, low pulse-temperature ratio, and initial leucopenia determine that. But to pin a label on one type of infection may be difficult, and by the time laboratory tests have been completed the patient may be well, and lost sight of, and the type diagnosis may be of only remote academic interest. On the other hand, the virologist has his troubles. In his laboratory he can isolate viruses or distinguish between various strains, but he has no way of linking these up with clinical appearances. As Dalldorf sees it, the clinician is the man on the spot, and he has unique opportunities for studying both symptomatology and epidemiology. He offers as an example the Coxsackie viruses. Group A causes herpangina, Group B causes Bornholm disease, and Group C causes encephalitis, and there is no difficulty in distinguishing between them clinically. He points out that clinicians, Sylvest in the case of Bornholm disease and Gregg in the case of maternal rubella, did all their work and established their facts, without the aid of, or even the need for, laboratory aids. Dalldorf goes further—he states that the clinician can identify poliomyelitis very easily—it is a paralytic disease; that the so-called "silent" or "abortive" forms are more often due to other, similar

viruses, and that the finding of poliomyelitis virus in the faeces of a patient is of no help in making a diagnosis, but merely indicates that the patient is harbouring the virus.

Whether all that Dalldorf states is acceptable or not, there is no doubt in his contention that the clinician, merely by observing and recording carefully, can do a great deal towards the elucidation of the virus diseases, in ways that are beyond the reach of the laboratory worker.

#### THE AETIOLOGY OF ATHEROSCLEROSIS.

STATISTICS are facile things, and the combination of incompletely controlled statistics with *ad hoc* reasoning can be made to prove anything. For instance, in connexion with the cholesterol hypothesis of the causation of atherosclerosis, one argument advanced in its favour was that in France, during the last war, some 20 deaths per 100,000 of the population were due to atherosclerosis, while this figure rose to about 25 in the post-war years. (Comparable figures are quoted for most European countries.) Diets were very low in fats during the first period, and normal during the second, so that it was reasoned that the increase in atherosclerosis was due to higher fat consumption. Apart from the facts that the population at risk in the second instance was considerably different from that in the first, and that many other dietary factors were not considered, the reasoning was faulty. One other way of stating the conclusion, if the differences in fat consumption alone are being considered, is that in spite of a low fat intake 20 people in every 100,000 of the population died of atherosclerosis, and that a higher fat intake increased this figure by only 25%; and a reasonable inference would be that there is some other basis for the development of atherosclerosis, while the intake of a normal amount of fat may have some secondary influence on this basic cause.

The thrombosis hypothesis to explain the development of atherosclerosis was first advanced by Rokitansky over a hundred years ago, but it was eclipsed by other theories. Lately it has been revised, with enough evidence to give it weight, while the fat hypothesis has lost ground because it is purely theoretical, and does not account for all the observed facts. J. B. Duguid,<sup>2</sup> in discussing these theories, points out that although rabbits fed on cholesterol-rich diets develop atheroma-like lesions in their arteries, there is no convincing evidence that comparable levels of cholesterol in the blood produce similar effects in man. Actually, of course, there is a considerable difference between the size and numbers of the *vasa vasorum* in man and in the rabbit. Duguid also emphasizes that although in man atherosclerosis often coincides with excessive intake of fats associated with rich living, it is also found, not only in people who eat a "normal" amount of fats, but in the ill-nourished. Moreover, fatty changes of degrees falling short of atherosclerosis are almost universal in human adults, regardless of any standards of eating.

Duguid states that a significant proportion of the lesions classified as atherosclerosis are actually altered thrombi. He provides illustrations of the successive stages wherein a mural thrombus becomes covered by endothelium, and then as it shrinks and becomes organized it is incorporated in the intima, and appears as a fibrous thickening of this layer. Usually, according to Duguid, even before organization is complete, fatty changes make their appearance in the plaque, and sometimes there may develop softening and ulceration, and even calcification.

Duguid refers to his earlier histological surveys of the aorta and coronary arteries, and to his findings that arterial thrombosis is quite common; the smaller thromboses, giving rise to no symptoms, are found only in systematic post-mortem surveys; they can easily be demonstrated as intimal thickenings, identical with atherosclerosis. The fatty changes which dominate the appear-

<sup>1</sup> New York State J. Med., August 1, 1955.

<sup>2</sup> Practitioner, September, 1955.

ance of most of these thickenings are considered by Duguid to be breakdown products of the blood of the thrombi.

Nevertheless, Duguid concedes a possible dual origin of atherosclerosis. In rabbits, the fatty deposits which appear after a diet with a high-cholesterol content may ultimately become fibrosed, and present the appearances of atherosclerosis. It is not impossible that the normal superficial fatty streaking of the aorta seen in young persons, and the deposits that occur in familial hypercholesterolemia, may ultimately become fibrosed and appear as a form of atherosclerosis. Yet these lesions never produce narrowing of the lumen, whereas thrombotic atherosclerosis always does. It is this narrowing of the lumen, particularly, which has given rise to dissatisfaction with the fatty infiltration hypothesis, and awakened interest in the thrombosis hypothesis, and Duguid seems to have a sound argument in favour of the latter. He does not deny that fatty streaking of the intima, for instance, could be a starting point for mural thrombosis, but he doubts that excess fat in the diet can be the primary cause. Since fatty streaking of the intima is commonest in diabetic children and in those who have died from acute febrile conditions, he suggests that it is a result of disturbance of fat metabolism rather than of simple fat excess. And since the lesions of atherosclerosis are due to thrombus formation, the cause may be found in the clotting factors of the blood rather than in the tissues of the vessel walls.

With regard to Duguid's assertion that all adults have fatty changes in their arteries, there is some evidence to show that gross reduction of dietary fat, far below a normal physiological intake, is necessary to bring about absorption of fatty deposits in the vessel walls.

It might be said that an excessive fat intake could be the direct cause of an increased liability to thrombosis, but this has been dealt with by J. R. O'Brien.<sup>1</sup> He gave volunteers varying fatty meals, and estimated their blood-fat levels and clotting times. He found that in the presence of platelets and of a water-wettable surface there was no detectable difference between the clotting time of lipemic blood and of blood taken after fasting; when the platelets were removed or inactivated, lipemic blood clotted faster, and apparently generated more thrombin. The accelerated clotting time showed no relationship to the increase in either particulate or non-particulate fat.

It would seem, then, that the quantity of fat in the diet, *per se*, can have little to do with the development of atherosclerosis, which apparently depends on basic disturbances of a nature not yet determined; but that when such basic disturbances exist, fat in the diet, not necessarily in excess of physiological requirements, may contribute to the more rapid development of atherosclerosis. It must be obvious that there can be no good in reducing fat intake below physiological requirements, and it is permissible to argue that restriction of fat intake would have little real value so long as the basic causes of atherosclerosis remain uncorrected.

#### ALCOHOL IN INTRAVENOUS FEEDING.

THE value of parenteral nutrition is rather uncertain, but there may be a place for it in certain disease conditions. Originally a 5% or 6% solution of amino acids derived from the acid or enzymic hydrolysis of protein was given with addition of glucose as a source of energy. In view of the difficulties of supplying sufficient energy in such mixtures, because of the large volumes required, A. W. Wilkinson<sup>2</sup> has suggested the addition of ethyl alcohol to such mixtures. In order to give 2100 Calories to a patient one would need to inject 11 litres of 5% or 5.6 litres of 10% glucose. Emulsions of fats have been developed to give large energy value in small volumes, but they are difficult to prepare and not very stable. A 15%

fat emulsion would provide 1200 Calories per litre, but is not available commercially and is not easy to prepare. With intravenous infusions of alcohol given at a constant rate there is a rather slow increase of blood alcohol concentration until a steady level is reached which varies with the dose. Most of the alcohol becomes distributed in the non-fatty tissues of the body. Mellanby found, over thirty years ago, that 8.0 grammes or 10 millilitres of alcohol could be metabolized per hour, but the author found that this could, in certain cases, be somewhat increased. During a continuous infusion when the rate of oxidation equals the rate of administration, a steady plasma concentration is maintained.

The administration of 100 millilitres of solution per hour corresponds with a dosage of six or ten millilitres of alcohol per hour (6% or 10% solution of alcohol), the oxidation of which is well within the metabolic capacity of the patient.

When a glucose solution is administered intravenously the proportion of the sugar lost in the urine varies with the concentration used and the rate of infusion, but may be as high as 30%. With fructose and invert sugar the loss is much less. The urinary loss of amino acids is reduced when fructose is used instead of glucose in combination with protein hydrolysates. Only about 3% of alcohol is lost in the urine and expired air. A 5% glucose solution with 5% amino acids could provide 387.5 Calories per litre. A 6% alcohol solution with 5% amino acids gives 536 Calories per litre. A 5% glucose solution with 6% alcohol and 5% amino acids gives 723.5 Calories per litre. A 5% glucose solution with 10% alcohol and 5% amino acids gives 947.5 Calories per litre. A 10% fructose solution with 6% alcohol and 5% amino acids will give 911 Calories per litre. For reasons given above the last solution will give the largest number of available Calories, nearly 80% of which are non-protein Calories. The author has found that any of these solutions with alcohol can be used safely for intravenous injection. A few patients complained of headache, but most slept quietly. Signs of intoxication did not appear.

The author reserved alcoholic infusions for patients with advanced states of malnutrition who could not be fed by mouth or jejunostomy. There was no direct evidence of nutritional improvement, but the patient was kept alive. Occasional success was obtained in seriously ill patients fed entirely by the intravenous route for prolonged periods. Alcohol should not be administered intravenously to patients with head injuries or raised intracranial pressure.

#### THE OBSTETRICIAN AND THE AETIOLOGY OF CEREBRAL PALSY.

THE literature of cerebral palsy abounds with statements that the aetiology of the disease is chiefly obstetrical, whereas obstetrical literature rarely mentions it. It is therefore noteworthy that two members of the Department of Obstetrics at the Johns Hopkins University and Hospital, Nicholson J. Eastman and Miguel DeLeon,<sup>3</sup> have urged all workers in the cerebral palsy field—obstetricians, paediatricians, health officers and neurologists—to cooperate fully in determining the aetiology in every case. In the United States of America the incidence of cerebral palsy is approximately 3.5 per 1000 births. This represents 11,200 new cases each year—a figure which commands attention. In a search for significant aetiological factors Eastman and DeLeon have reviewed the case records of 96 infants who developed cerebral palsy and who were born at the Johns Hopkins Hospital; at the same time a control series of 11,195 infants born over the same period of time was studied for comparison. Of the 96 infants 39 (41%) were reported in "poor" condition at birth, compared with 2% in the control series; 13% of the babies who developed cerebral palsy did not breathe spontaneously for six minutes or more, whereas in the control group this

<sup>1</sup> *Lancet*, October 1, 1955.

<sup>2</sup> *Proc. Nutrition Society*, Volume 14, Number 2, 1955.

<sup>3</sup> *Am. J. Obst. & Gynec.*, May, 1955.

occurred about once in 300 cases. For 62 mature babies in the palsied group the average stay in hospital was 15·1 days compared with 5·3 days in the control series. The conditions which necessitated such prolonged stay in hospital were abnormal respiratory behaviour, attacks of cyanosis, feeding difficulties, prolonged unexplained fever and failure to gain weight. Only five infants in the series suffered from convulsions. Thus about one-half of the cerebral palsy infants showed clear-cut evidence of having sustained some form of intrauterine injury either shortly before birth or in the ante-partum period.

The next step was to investigate the nature of the injury. Factors of no apparent significance were race, age, parity, syphilis, virus infection in the mother, type of pelvis and total duration of labour. There was no case in which Rh immunization could be incriminated—the percentage of Rh-negative mothers was 15, the same as in the control series. There was no relation between the type of nerve lesion and any particular obstetrical complication. The incidence of premature birth was 35·4% (34 cases), or about six times the usual incidence in the hospital. A pathological degree of uterine bleeding was present in 11 of these cases in the last half of pregnancy or in labour, and it is thought that the placental separation anoxia could have been responsible for the cerebral damage; in the other 23 cases prematurity itself was the aetiological factor. There was suggestive evidence in the series that the degree of prematurity increased the likelihood of cerebral palsy. Intrapartum fever was seven times more common in the mothers of the cerebral palsy infants, and neonatal fever (100° F. for three or more days) was 300 times more common in the cerebral palsy infants. The problem of infection *in utero*, with its toxic and anoxic effects, may be one sphere in which the obstetrician can help in the reduction of the disease. Anoxia due to placental separation has always been thought to be a cause of cerebral damage; in this series, bleeding occurred at some time during the pregnancy in 35 cases (36·5%), as against 18·6% in the control series. Mechanical trauma is responsible for some cases of cerebral palsy—in this series there were eight breech deliveries, six mid-forceps deliveries, three cases of shoulder dystocia and seven cases with second stages of more than three hours. The incidence of malformations was 14·6% (14 cases) in the cerebral palsy series and 3·8% in the control series. Foetal distress was noted four times more frequently in the palsied group than in the control group. Post-maturity, prolapse of the cord and Cæsarean section showed no variation in incidence.

This is, of course, not a large series. Investigation of greater numbers is needed if the aetiology is to be clarified and rational preventive measures are to be developed. A scheme outlined by Eastman and DeLeon sounds promising, though it was apparently still in the blueprint stage when their paper was written. It depends on liaison which is being developed between the American Academy of Cerebral Palsy and the American Academy of Obstetrics and Gynecology. The plan is to have included in the case history of every infant with cerebral palsy the date of birth, the name and location of the hospital in which the baby was born, and, if possible, the name of the attending obstetrician or other doctor. Next, every cerebral palsy clinic and every specialist in the field will be requested to report all definitely diagnosed cases to the obstetrician who attended the mother or to the obstetrical clinic concerned. The two steps are to be the responsibility of the American Academy of Cerebral Palsy. Eastman and DeLeon point out that in the past paediatricians and neurologists have hesitated to report these cases to the obstetrician concerned because of the unpleasant implications related to traumatic aetiology. This now does not hold, as trauma is regarded as an uncommon cause of cerebral palsy, and so the way should be opened for obstetricians and obstetrical clinics to build up large series of cases for analysis. The culminating step will be for the American Academy of Obstetrics and Gynecology to establish a cerebral palsy register for the pooling and analysis

of records from obstetricians and clinics. Then significant aetiological factors may emerge clearly enough to suggest a programme of prevention.

#### RAPID DETERMINATION OF BACTERIAL SENSITIVITY.

WITH ever-increasing calls for determining the antibiotic sensitivity of infecting organisms, a quicker method than the disk-plate one would be very welcome. M. A. Rogers, W. L. Ryan and J. M. Severens<sup>1</sup> point out that the predominant characteristic of bacteria is their ability to ferment carbohydrates, and that with very few exceptions all pathogenic bacteria ferment glucose. These workers have made this the basis for a test which takes, in some instances, only an hour to perform. Controlled by parallel disk-plate tests, this new technique was shown to be qualitatively accurate.

The medium used is phenol red dextrose broth, with yeast extract added as a fermentation accelerator; each antibiotic is added to a separate portion. Blotting paper disks are impregnated with this mixture. To carry out the test, infected material is placed in a screw-capped jar with physiological saline and shaken vigorously; then to one millilitre of this suspension is added an impregnated disk; incubation is carried out at 37° C. on a waterbath. A control tube containing no antibiotic is put up for each series, and a reference tube containing a disk and one millilitre of sterile saline is also put up. As soon as the control tube changes colour completely, the colour changes for the whole series are read. *Pseudomonas* and *Alkaligenes* do not ferment dextrose, but produce an increased pH and a violet colour; other organisms ferment dextrose, and produce acid and a yellow colour. Thus if the colour of the medium remains red, complete inhibition is indicated. Partial inhibition is indicated by comparison with the original red of the reference tube. Times for determination vary from one to eight hours, with an average of two and a half hours. The rapidity, ease and simplicity of this test should commend it to all concerned with making sensitivity tests.

#### DIET AND DISSECTING ANEURYSM.

DISSECTING ANEURYSM of the aorta appears frequently in conjunction with pregnancy, coarctation of the aorta, hypertension, and arachnodactyly. It has been produced in animals by directly traumatizing the aorta in various ways, thereby interfering with the nutrition of the media. Recently, however, a high incidence of dissecting aneurysm in experimental lathyrism in animals has been noted, and W. B. Bean and I. V. Ponseti<sup>2</sup> discuss these observations with regard to a series of experiments on rats conducted by Ponseti and Baird; in rats fed on a diet containing sweet pea meal, there were many skeletal defects and also dissecting aneurysms of the ascending part and the arch of the aorta. Ponseti and Bean thereupon analysed some cases of dissecting aneurysm in man, and found that bone defects are often associated with this condition. The substance in legumes which produces these disorders in rats is  $\beta$ -aminopropionitrile, which has a structural resemblance to pantothenic acid, and possibly acts as an antimetabolite. Its action is to produce faults in the ground substance, the cement which binds the tissues together. These authors suggest that, whether because of inherent genetic or metabolic defects, or by dietetic defects, some types of dissecting aneurysm may be caused by faults in the ground substance, similar to those produced by  $\beta$ -aminopropionitrile. This offers a starting point for investigations which may have far-reaching results in several fields, since already it indicates common features in both cardiology and orthopaedics.

<sup>1</sup> Antibiotics & Chemother., July, 1955.

<sup>2</sup> Circulation, August, 1955.

## Abstracts from Medical Literature.

### SURGERY.

#### Internal Hernia After Gastrectomy.

C. MORTON, E. ALDRICH AND L. HILL (*Ann. Surg.*, June, 1955) state that whenever an anastomosis is made between stomach and jejunum a peritoneal ring is formed, which may be the site of internal hernia. They describe five such cases and state that this complication should be suspected when, after a gastro-enterostomy or a gastrectomy (either antecolic or retrocolic), the patient suffers upper abdominal pain with persistent nausea and vomiting, and has radiological evidence of obstruction in the intestine distal to the gastric stump. Anatomically, in a gastro-jejunostomy (anterior or posterior), there is only one peritoneal ring through which internal herniation may occur; in an antecolic gastrectomy there is also only one ring; whereas in a retrocolic gastrectomy there are two rings, one above and one below the transverse mesocolon. To prevent this complication, the authors suggest that these rings be closed by sutures at the time of the original operation.

#### Intestinal Obstruction Resulting from Malrotation of the Intestine.

E. ALDRICH, C. MORTON AND J. BAKER (*Ann. Surg.*, June, 1955) discuss 14 cases of intestinal obstruction due to mal-rotation of the bowel. Eleven patients had arrest of normal rotation, two had non-rotation, and one had reversed rotation. Thirteen patients were operated on, seven surviving. The authors discuss diagnosis and treatment and briefly review the embryological development of the mid-gut.

#### Carcinoid Tumours of the Gastro-Intestinal Tract.

H. ILGENFRITZ AND W. MATHEWS (*Ann. Surg.*, June, 1955) discuss a series of 25 cases of carcinoid tumour of the gastro-intestinal tract. Nine originated in the appendix, six in the ileum, two in the jejunum, one each in the stomach and duodenum, and six in the rectum. One of the six rectal lesions and seven of the other ten extraappendiceal lesions had metastasized, whereas none of the appendiceal carcinoids were clinically malignant. Symptoms of intermittent partial intestinal obstruction were present in three of the six patients with ileal carcinoids. In all except one of the cases of appendiceal tumour the condition presented itself with symptoms of appendicitis.

#### Radical Subtotal Gastric Resection for Antral Gastric Carcinoma.

H. MAYO, J. OWENS AND M. WEINBERG (*Ann. Surg.*, June, 1955) conclude, from a study of 194 cases of gastric carcinoma, that radical subtotal gastric resection is inadequate to salvage patients with antral carcinoma which has already metastasized to the regional lymph nodes. They further conclude, from a study of the sites of metastases and recurrence noted in this and other studies,

that total gastrectomy has little more to offer these patients. They propose the performance of pancreatico-duodenectomy in addition to subtotal gastrectomy in cases of gastric carcinoma originating in the antrum in which lymph-node metastasis is present.

#### Gastrectomy for Acute Gastro-Duodenal Perforation.

D. COOLEY, G. JORDAN, H. BROCKMAN AND M. DEBAKEY (*Ann. Surg.*, June, 1955) state that gastrectomy, when properly applied, may be employed with a sufficiently low mortality and morbidity to justify its use as primary treatment in acute gastro-duodenal perforation. This knowledge, plus the relatively high recurrence rate following simple closure of the ulcer, further supports the advocacy of gastric resection as the treatment of choice for all perforated gastric ulcers and for those perforated duodenal ulcers which have had previous complications or a long history.

#### Gastric Secretion Following Vago-Splanchnic and Splanchno-Vagal Anastomosis.

A. IMPARATO AND J. HINTON (*Ann. Surg.*, June, 1955) state that the poor results obtained in the treatment of peptic ulceration from vagotomy are not due to incomplete surgery but occur because the stomach can form free hydrochloric acid without the aid of any nervous impulses at all. They conclude, from a follow-up of 484 subjects of duodenal ulcer treated by subtotal gastric resection with removal of the ulcer, that the Pólya-Balfour ante-colic resection gave the best results. Where in addition subdiaphragmatic vagotomy was added, the results were unsatisfactory, as there was a high incidence of the "dumping" syndrome. The authors were dissatisfied with the results of the Billroth I procedure for duodenal ulcer because they had a 30% "dumping" rate.

#### Primary Diverticula of the Duodenum.

J. WAUGH AND E. JOHNSTON (*Ann. Surg.*, February, 1955) state that primary diverticula of the duodenum are associated with diverticula of the colon and other portions of the small intestine. They rarely cause symptoms, but the evaluation of symptoms complained of by patients found to harbour duodenal diverticula can be extremely difficult. Operation is indicated in less than 1% to 2% of the cases of duodenal diverticula noted on angiograms. When operation is indicated, the operation of choice is excision of the sac with careful closure of the duodenum. Injury to the common bile duct or pancreas must be avoided. The authors were disappointed at the operative results in their series. Less than half of their patients had what could be described as an excellent result.

#### Healing of Ureteric Muscle in Intubated Ureterotomy.

J. LAPIDES AND E. L. CAFFERY (*J. Urol.*, January, 1955) have investigated the problem of stenosis of the upper part of the ureter after the Davis operation of intubated ureterotomy.

After a careful study in 20 dogs, in which polythene tubing was used to act both as ureteric splint and as nephrostomy drain, they found that the ureters were entirely patent and the resected portion almost completely bridged by muscle where intubation had been for six weeks. The experimental findings indicate that periureteric fibrosis is the most important factor when failure occurs after the Davis operation. This complication can be avoided partially by enclosing the incised portion of ureter in retroperitoneal fat, and by preventing prolonged leakage of urine into the operation area. Six weeks are necessary for complete enclosure of the ureter by muscle, but only three weeks for regeneration of the mucosal layer.

#### Renal and Ureteric Surgery without Intubation.

F. C. HAMM AND S. R. WEINBERG (*J. Urol.*, March, 1955) state that observations they have made during the past three years tend to confirm a suspicion, held earlier, that in plastic operations on the upper part of the ureter and renal pelvis splinting tubes and catheters are not always necessary, and indeed may be harmful. The evidence collected goes to show that splinting tubes may be omitted in (i) certain uretero-pelvic plastic operations, (ii) heminephrectomy and calycectomy, (iii) uretoto-vesical implantation, and (iv) after ureterotomy through constricted areas in the ureter. The last-mentioned may simply be allowed to heal, without suturing, intubation or nephrostomy. Elimination of splints and nephrostomy tubes in "Y"-plasty operations on the renal pelvis was derived from the observation that, if the tubes inadvertently came out, results seemed to be as good, and healing proceeded well. In the first few patients under test, only the splint was omitted. Later the nephrostomy tube was eliminated as well, and drainage was allowed for by a small opening left in the renal pelvis. In carrying out this new and simplified technique, it is important to avoid obstruction due to kinks in a redundant ureter; this is effected by performing a high nephropexy. The second cause of obstruction in this region is faulty repair of the apex of the "V"-shaped piece of renal pelvis as it is sutured into the upper part of the ureter; it is most important to use as few sutures as possible, for excessive suturing leads to fibrosis. No attempt should be made to secure a watertight closure. In reimplantation of the ureter into the bladder, a careful mucosa-to-mucosa anastomosis is all that is required; all the drainage that is required is a uretero-vesical tissue drain, and a cystostomy tube. In ureteric stricture, a simple incision through the anterior wall is made and the narrowed ureter left open like a ribbon; a ribbon tissue drain goes down to the site. No suturing of the ureter or splinting is used. These principles were applied in 20 cases: four were "Y"-plastic operations, five calycectomies, two uretero-vesical anastomoses and nine ureterotomies for stricture. No death occurred in the series, and no later nephrostomy was required. The results were rapid and good in all cases except one, a difficult case of

neoplasm of low grade involving the intramural part of the ureter. After resection in this case, the ureter was too short to allow reimplantation, and a tube made from the bladder had to supplement the shortened ureter. A constriction resulted three months later, and a cutaneous ureterostomy had to be established. It is likely that this failure was the result of tension at the site of anastomosis, rather than absence of a splinting tube.

#### Combined Perineal Biopsy and Retro-pubic Prostatectomy for Carcinoma.

H. P. McDONALD, W. E. UPCHURCH AND C. E. STUDEVANT (*J. Urol.*, March, 1955) have been impressed by the access afforded by the retro-pubic approach for total prostatic-vesiculectomy in early cases of prostatic carcinoma, but state that this approach does not lend itself to a reliable biopsy procedure. The most reliable method of early carcinoma diagnosis is by open perineal exposure. When use is made of the rapid method of frozen sections of material obtained by this route, there is a definite risk of error in nearly one-tenth of all cases; therefore permanent stained sections should be used, and total prostatic-vesiculectomy carried out retro-pubically three to five days later if the biopsy finding is positive. In every instance the retro-pubic operation was found to be much less difficult because of the previous dissection of the rectum away from the prostate. The results in 17 cases show some gratifying success over periods up to three years.

#### Complications from Resection of the Colon.

J. EDMISTON AND W. BIRNBAUM (*Am. J. Surg.*, July, 1955) have studied a series of 226 cases of resection of the colon distal to the ascending colon. Only non-obstructive cases of primary anastomosis were considered. Of the patients 67 had a complementary caecostomy, and it was found that complications attributable to leakage at the anastomosis were significantly less in this group. The authors therefore conclude that complementary caecostomy is still a useful procedure in primary non-obstructive colonic anastomosis when ideal conditions for bowel anastomosis are not present. The rationale of this caecostomy is not to divert the faecal stream but to act as an outlet for excessive gas or stool within the colon and so prevent over-distension of the affected bowel.

#### Direct Vision Intracardiac Surgery with Controlled Cross-Circulation.

C. LILLEHEI, M. COHEN, H. WARDEN AND R. VARCO (*Surgery*, July, 1955) describe their method of controlled cross-circulation, which allows them to operate by direct vision on the bloodless heart. As a consequence, four varieties of congenital cardiac malformations previously either not operable or subject only to palliative procedures have been successfully treated by intracardiac correction. These malformations were ventricular septal defects, atrio-ventricularis communis, isolated infundibular pulmonary stenosis and tetralogy of Fallot. Patients who have had these

defects surgically corrected have been studied post-operatively and shown to have normal circulations. Grafts and prostheses were not used in these operations. By their technique, the authors have been able to obtain total cardiac bypass for up to forty minutes at normal body temperatures. This has been obtained by placing a tourniquet around the base of the aorta to control coronary blood-flow and regurgitation through the aortic valve, whilst the rest of the body is perfused by the donor's heparinized blood. In the 32 cases in which operation was performed there was virtually no patient mortality attributable to the cross-circulation *per se*, nor was there any donor mortality.

#### Failure of Partial Gastrectomy with Gastro-Duodenostomy for Duodenal Ulcer.

N. ORDAHL, F. ROSS AND D. BAKER JUNIOR (*Surgery*, July, 1955) conclude, from a four-year follow-up of a series of patients suffering from gastric or duodenal ulcer, that partial gastrectomy with gastro-duodenostomy for duodenal ulcer is followed by a prohibitively high rate of recurrent ulceration. They consider, however, that partial gastrectomy followed by gastro-duodenostomy is the operation of choice in cases of gastric ulcer.

#### The Surgical Treatment of Bleeding Oesophageal Varices.

R. L. LINTON (*West. J. Surg.*, June, 1955) states that oesophageal varices develop because of an obstruction to the flow of portal venous blood into the systemic venous system. They represent one of nature's attempts to create a shunt between the portal venous and the systemic venous systems. Their presence constitutes a continual hazard to a patient's life because of the danger of massive haemorrhage from them. The site of the portal bed block resulting in obstruction to the flow of portal venous blood may be (i) intrahepatic owing to portal cirrhosis, or (ii) extrahepatic from occlusion of the portal vein due to (a) its congenital obliteration or (b) secondary to thrombosis of the vein, or (iii) a combined form of intrahepatic and extrahepatic types. A number of emergency methods have been advocated to aid in the control of haemorrhage from oesophageal varices, but in most instances they have been ineffectual or carry too high an operative risk to warrant their employment. These include interruption of the splenic artery, interruption of the hepatic and splenic arteries, injection of the oesophageal varices with a sclerosing solution, oesophago-gastrectomy or total gastrectomy, and gastro-oesophageal tamponade. The last of these methods has proven most effectual, and for temporary control of the bleeding it is highly recommended. It is carried out by maintaining traction on a balloon which has been inserted into the stomach attached to a gastric tube. After being placed in the stomach, it is inflated to 15 centimetres in diameter. The author outlines in detail a plan of emergency treatment of massive oesophageal hemorrhage. He considers that the most effective definitive treatment for bleeding oesophageal varices secondary to an

intrahepatic or an extrahepatic portal bed block is the bypassing of the portal venous blood by the construction of a spleno-renal or a direct porta-caval shunt. Splenectomy with an end-to-side spleno-renal anastomosis is the preferable type of procedure in the majority of cases.

#### The Present Status of Renal Angiography.

E. W. RICHES (*Brit. J. Surg.*, March, 1955) has carried out renal angiography in more than 200 cases. He has tried both methods, that of the femoral approach and that of the approach by the lumbar route as described by Whiteside. He uses needles measuring from 15 centimetres for adults to nine centimetres for children. The syringe has a metal cover for protection of the hand in case of breakage during rapid injection. He uses a home-made box and manual manipulation of the films. He prefers general anaesthesia with arrest of respiration during exposures. He considers that this method of investigation is a safe procedure and that the technique can be mastered easily. He states that it is an essential part of the investigation of a space-occupying lesion in the kidney, of hydronephrosis, of congenital anomalies, and of any condition for which partial nephrectomy is contemplated. It is often desirable in cases of suspected renal hypertension. The contraindications to its use are iodine sensitivity and uraemia. The author refers to the dangers, which in his opinion are very minor, and the causes of failure.

#### Survival Rates after Radical Mastectomy for Breast Carcinoma.

S. HARRINGTON (*Western J. Surg.*, May, 1955) states that from 1910 to 1949, inclusive, 8796 patients with carcinoma of the breast were operated on by radical mastectomy at the Mayo Clinic. Any lesion was considered operable, regardless of ulceration, provided it was freely movable from the thoracic wall. From a study of these patients the author draws the following conclusions. In special studies in which the technique of the operation was the same in all patients and the different factors which influence prognosis were as similar as possible, wide variation in survival rates was found. Some patients survived operation only a few years, whereas others survived many years. There was no way of determining prognosis in the individual case. There must be an important factor influencing prognosis present in the normal tissues of the body. At present there is no method of determining or evaluating this property of normal tissues.

#### Main Duct Papilloma of the Breast.

W. SNYDER AND L. CHAFFIN (*Arch. Surg.*, May, 1955) state that from a wide experience of dealing with duct papillomata of the breast they prefer to remove them locally rather than use a more radical procedure. Prolonged follow-ups have justified this procedure, as no case was found in which the patient died of carcinoma arising from the breast operated on when an infiltrating carcinoma had not been discovered at the original operation.

## Medical Societies.

### THE UROLOGICAL SOCIETY OF AUSTRALASIA.

THE annual meeting of the Urological Society of Australasia was held at Melbourne on March 7 to 10, 1955, Dr. J. B. SOMERSET, the President, in the chair.

#### Morbidity following Prostatectomy.

A symposium on morbidity following prostatectomy was held; there were three contributors.

RICHARD G. S. HARRIS (Sydney) read a paper entitled "Morbidity After Suprapubic Prostatectomy" (see page 917).

HENRY MORTENSEN (Melbourne) read a paper entitled "Morbidity After Prostatectomy by Transurethral Resection" (see page 919).

KEITH KIRKLAND (Sydney) read a paper entitled "Morbidity in Retropubic Prostatectomy" (see page 921).

G. R. DAVIDSON (Ballarat) said that it should be the object of every urologist to aim consistently at two targets, which were obviously very close together and which, just as obviously, he could never hit. Target mortality zero and target morbidity zero were, so to speak, the toxophilite's gold of the urologist.

If an operation was basically sound and did not inflict much anatomical and physiological trauma, it could be claimed that the degree of morbidity following such an operation varied inversely with the skill and experience of the surgeon. To a large extent this was true of any of the methods that were in use for the relief of bladder neck obstruction. Dr. Davidson found when he critically reviewed cases of his own that had gone wrong somewhere, that in the majority of cases some error of judgement, some fault in execution or miscalculation had occurred which was probably responsible for the particular complication. He admitted, however, that often it was much easier to look backwards than to look forwards, and it was not difficult to be wise after the event.

Speaking generally, morbidity factors could be divided broadly into three classes: (i) morbid factors which either singly or in combination could cause death; (ii) morbid factors which could cause permanent impairment of function; (iii) morbid factors which could cause a temporary impairment of function.

With regard to the first of such classes, it could be said that no matter what the cause was, all prostatic deaths were associated to a greater or lesser degree with failure of the peripheral circulation. Attention to all the controllable factors which caused this would prevent the development of many other morbid processes. Improved operative technique, better anaesthetic facilities, the control of haemorrhage and sepsis and the replacement of fluid and blood had minimized the incidence of that so often lethal complication.

When circulatory collapse did occur, however, those who worked in larger centres and had the services of a trained expert in resuscitation to fall back on were fortunate. In smaller centres the desirability of a surgeon, anaesthetist and assistant working as a team was obvious. Dr. Davidson confessed that the problem of electrolyte imbalance without the help of advanced laboratory facilities was a nightmare to him. He had not found the question of haemorrhage occurring in association with retropubic prostatectomy a particularly worrying one. In something over two hundred cases he had found it necessary to open and drain one bladder for immediate post-operative haemorrhage. Secondary hemorrhage had occurred as late as three weeks after operation, and he had the impression that these hemorrhages, when they did occur, could come on much later than they had years previously. Such hemorrhages could be very trying to all concerned and did not always immediately respond to evacuation of the clot and the insertion of a bag. Dr. Davidson sometimes wondered if there could be any connexion between them and the use of antibiotics.

While he was on the subject of antibiotics, Dr. Davidson said that his present feeling was that they should not be used as a routine; but rather kept in reserve and used if definite indications arose.

He had a feeling that indwelling catheters and streptomycin were a bad combination and might be responsible for many strictures. He rather thought it was Dr. Kirkland who first put that thought into his mind some two years or so earlier.

With regard to morbidity causing permanent impairment of function, Dr. Davidson thought that the comment would be: (a) obstruction, (b) incontinence, (c) sepsis, (d) hernia. To his knowledge he had had three cases of bladder neck obstruction following retropubic prostatectomy. On two occasions he set out to remove what appeared to be a large adenomatous prostate and found that the gland was densely adherent posteriorly and obviously malignant. When this happened it was usually not discovered until the gland was partially removed, and under such circumstances the operation had to be proceeded with, and the sequence of events could well be: trauma and excessive tissue damage, infection, scar tissue formation, obstruction and (or) some measure of incontinence.

In both his cases the glands were large, weighing over 150 grammes, and even if a correct diagnosis had been made, Dr. Davidson did not think that they were resectable. It was a mistake which he would not make again in the future.

Exclusive of cases such as those mentioned, he did not think that incontinence following retropubic prostatectomy was common, provided, of course, that one avoided removal of pieces of the membranous urethra along with the prostate. Even if this did occur such incontinence was, fortunately, usually temporary. There were, however, individuals who developed a permanent form of stress incontinence after any type of prostatectomy. This was due, he thought, to inherent poor quality of the muscles of the external sphincter and its environs.

In regard to sepsis, where urinary infection could be controlled before operation, it was seldom of consequence after retropubic prostatectomy.

While the desirability of making a full investigation in all cases was admitted, it was often not practicable. Obviously one could not perform even reasonably immediate prostatectomy in cases of acute retention of urine, and at the same time investigate the upper tract. When the fortunately very rare cases of fulminating pyelonephritis were excluded, infection with properly performed retropubic prostatectomy was not a common problem. In his opinion, when it did persist it always indicated the presence of some other factor.

Referring to hernia of the wound, Dr. Davidson said that it had been his practice to make a three to four inch long vertical incision on the assumption that adequate room would prevent trauma to the pubic bones and render less likely the occurrence of *osteitis pubis*. No *osteitis pubis* had occurred, but as the years passed he had noticed very occasionally some weakness in the wound, even in cases in which there had been no infection. This was probably due to insufficient attention to the transversalis fascia, which should always be carefully sutured. Dr. Davidson thought that he should change to a smaller transverse incision and would welcome advice on that point.

Morbidity causing temporary impairment of function was, of course, varied and common in all forms of prostatic surgery, but the retropubic operation in some quarters at least appeared to have developed an unfortunate association with *osteitis pubis*. He probably had been fortunate in not having any cases of this complication to date. Whether the measures he had taken to avoid it had any value, he did not know, but they were as follows: adequate incision; no gauze packs in the lateral recesses; minimal use of diathermy—frequently diathermy was not used at all; no sulphonamide or penicillin in retropubic space; watertight closure of capsule whenever possible; adequate drainage of retropubic space for at least three days.

Dr. Davidson would not argue if anyone told him that none of these were of much importance and that he had just been lucky and had not done enough yet. That might be so; but he would state that if he found himself getting 5% to 6% of cases of *osteitis pubis* he would abandon an operation which at present he thought was very good.

LIONEL A. JACOBS (Sydney) remarked that Dr. Harris felt, and with much justification, that the operation which he described and which he routinely used was the approach which offered the lowest morbidity. This was undoubtedly true in his hands, but then Dr. Harris by dint of long usage and experience performed this particular operation with meticulous attention to detail and with great dexterity. He had learned every pitfall and knew how to avoid morbidity. One item which he did very well was the "clean intracapsular removal" described by his brother. This was, to Dr. Jacobs's mind, the most important step in enucleation prostatectomy irrespective of the details of the rest of the operation. Smoothness of convalescence was directly proportional to the smoothness of the prostatic cavity. If one could judge by the remarks Dr. Harris had made, his morbidity must be very low indeed. It was, therefore,

natural and correct that he should continue to use a technique which gave him excellent results. Dr. Jacobs would submit, however, that his results could be matched by other members who just as constantly employed other methods of approach. He believed that the practice and thorough learning and long usage of any approach must lead to improvement of individual results as regards both morbidity and mortality. Dr. Jacobs had been taught the retroperitoneal operation, and a modification of this method was his usual procedure. In one hospital, however, where Dr. Harris was a consultant, because he felt that it was wise to practise another method, Dr. Jacobs most often did the Harris operation. He liked the procedure very much and was quite convinced that the immediate operative blood loss was less in the Harris than in the retroperitoneal approach. The Harris operation, however, demanded two factors. In the first place the nursing staff had to be trained to the procedure. This was easy if it was the only method used, but in some of Dr. Jacobs's private hospitals perhaps five or six men used as many different approaches and the nursing staff did not remain constant. Secondly, the required apparatus was expensive and finicky and could easily go wrong. On the other hand the retroperitoneal operation could be quite adequately performed with an ordinary general set. Dr. Jacobs was not prepared to say that any operation was better than any other, but he did think that the retroperitoneal procedure saved the young urologist the expense of special retractors, lights, needle holder and ligature carriers, and yet provided an operation which, if performed with care, understanding and reasonable surgical skill, would with practice provide him with morbidity figures approaching those of Dr. Harris.

There was no question of disagreement with Dr. Harris that better pre-operative treatment had made an enormous difference in the results now expected after surgical interference. They were not discussing mortality today; but factors leading to death also, if less severe, led to morbidity. McDonald, of McGill, in 1954, studying two groups of cases, 520 prior to 1944 and 530 since 1947, had shown a drop in mortality from 7.6% to 2%. This drop was due to two factors: (a) death from pyelonephritis—10 in Group 1, nil in Group 2; (b) death from haemorrhage—9 in Group 1, nil in Group 2. Death from ascending infection—surgical kidneys—had undoubtedly been reduced by the greater attention given to pre-operative urinary infections, catheter asepsis and the antibiotics. Bleeding had become a rare cause of death only since the increased use of blood transfusion. Dr. Jacobs agreed with Dr. Harris in his condemnation of the routine use of blood, but nevertheless the knowledge that it was to hand if required in the theatre in every case added considerably to his sense of security.

Dr. Harris, in discussing the various types of morbidity which could occur, had mentioned only two of a long list in which he found cause for dissatisfaction.

The first was the incidence of stricture. They would all agree that the more the trauma to the urethra, the greater the chance of stricture formation. Caine, who had been quoted by Dr. Harris, had shown fairly conclusively that the type of operation performed and the length of time the catheter remained *in situ* had little effect on the incidence of stricture. His findings, however, put stricture of the *fossa navicularis* as far the most common. Dr. Jacobs thought that some of the new plastic catheters introduced by A.C.M.I. might be an advance. Certainly a smaller bore catheter could be used as these catheters did not collapse and hence clots could be the more readily evacuated should that be necessary. Further, the plastic material did not cause as much urethritis as the red rubber.

Secondly, regarding the incidence of epididymo-orchitis which Dr. Harris found a worrying complication in spite of vas section, Dr. Jacobs submitted that the incidence might be reduced if the vas section was performed prior to and not after the major procedure as was the case in the classical Harris operation.

Dr. Jacobs then said that he would like to mention a few aspects of post-operative morbidity with which he had had fairly recent contact.

Dealing with *osteitis pubis*, he said that, notwithstanding the fact that Dr. Harris had not seen this complication, he had seen two cases following the transvesical operation and only one following the retroperitoneal. For the record neither of the suprapubic operations had been done by the Harris technique. He thought that *osteitis pubis* might be more often present than recognized. Most cases were mild and subclinical. He had had one X-ray picture taken three weeks after prostatectomy because of renal colic. There was definitely more separation of the pubic symphysis than was shown in the pre-operative skiagrams.

Referring to bacterial endocarditis, Dr. Jacobs said that it was not a complication particularly of a suprapubic operation, but he had become interested when about two years earlier a virulent and non-sensitive staphylococcus caused the urological ward of Sydney Hospital to be closed. Staphylococcal septicæmia caused at least one death. Staphylococcal endocarditis could be the end result of a staphylococcal bacteraemia following surgery in a patient who had been harbouring *Micrococcus pyogenes* in his urinary tract. The lesion was potentially lethal. In regard to chance of recovery, once a diagnosis was established, recovery depended on intensive therapy with enormous doses of the antibiotic to which the organism had been found to be sensitive. If the organism was sensitive to penicillin, 10 million units (crystalline) should be given daily by continuous drip. If the organism was insensitive to penicillin but sensitive to one of the cyclines, then three grammes per day should be given orally, or one gramme per day intravenously. If the organism was sensitive to erythromycin only, as was likely, then 400 milligrammes to 300 milligrammes every six hours should be given orally, or 200 milligrammes every six to eight hours intravenously.

Infection by *Streptococcus faecalis* was usually a true example of subacute bacterial endocarditis occurring as a result of invasion of a previously damaged cardiac valve by the organism. The successful treatment of this condition was again difficult, but of considerable importance. Treatment might be considered in two parts, therapy and prophylaxis. In therapy five to ten megauits of penicillin per day were given by continuous intravenous or intramuscular injection for four to six weeks. One gramme of dihydrostreptomycin was given twice a day for two weeks and then the dose was reduced to half a gramme twice a day for four to six weeks. Heparin was not recommended. In regard to blocking agents, "Benemid" was given to enhance the effect of antibiotics. "Probenecid" did not block the excretion of streptomycin and therefore could be used. In regard to the prophylaxis of infection by *Strep. faecalis*, no patient should be subjected to urosurgery until the possibility of a cardiac valve lesion was investigated. If a heart murmur existed, then one million units of penicillin and one gramme of streptomycin should be given on the day of operation and for several days after it.

Finally, there was long-standing prostatism which presented when a patient was almost in *extremis*. This type of condition was a sign of the times. Up to a few years before the patient would have died, but modern and better knowledge and understanding of electrolyte imbalance now made it possible to save the life of the unfortunate patient. Dr. Jacobs had seen two men during the last couple of years who presented with long-standing prostatic obstruction and in profound uremia. Cystostomy et cetera restored them to moderate health. In both cases the excretion pyelography showed marked upper tract dilatation. When finally these two patients came to prostatectomy they had a rocky time but came through. Then came a period of semi-invalidism, with recurrent attacks of pyelitis, minor electrolyte imbalances, nausea, anaemia and inability to put on weight. The urine remained constantly at a specific gravity of 1.010, and finally death occurred as a result of the infection of the damaged kidneys. Dr. Jacobs had the feeling that there were times when Nature knew best.

#### Diverticulum of the Urethra.

LEONARD MURPHY (Melbourne) read a paper entitled "Diverticula of the Anterior Portion of the Urethra" (see page 922).

#### Nephropexy in Nephroptosis.

R. J. SILVERTON (Sydney) read a paper entitled "Nephropexy in Nephroptosis" (see page 925).

COLIN EDWARDS (Sydney) said that nephropexy had passed through a phase of excessive use, amounting to abuse, and a subsequent phase of unjust condemnation. The position was now more stable in that those who could determine the indications for operation practised some effective form of nephropexy, albeit somewhat furtively. Dr. Silverton had given them an assessment of its value.

Those who had to perform secondary operations on kidneys were only too well aware that any renal operation might produce a nephropexy. At the same time many varied techniques had proved adequate to retain the kidney in a high position. It appeared therefore that the details of the actual method of suspension were of little consequence, provided that the renal fossa was cleared completely of adhesions and fat and that no obstructive factor was permitted to remain. Deming's method, which introduced a new principle, had enjoyed much popularity in recent years, but

so far as Dr. Edwards's limited experience went, it was neither more nor less successful than the suture techniques with or without capsular stripping. The problem was not so much to retain the kidney in good position as to select patients whose symptoms were susceptible to cure by this means.

Therefore Dr. Edwards concurred with Dr. Silverton that all infections and obstructions, intrinsic or extrinsic, should be eliminated at the same time. Without having any actual figures, Dr. Edwards believed that more than half of his nephropexies would be combined with some other operation. Few would deny the value of nephropexy as an adjuvant to certain plastic procedures, in the prevention of recurrent calculus or hydronephrosis or in the cure of some persistent infections. For an assessment of this last point, it would be useful to know if Dr. Silverton's infected patients had received any drug treatment prior to operation and what proportion were subsequently cured of their bacteriuria.

An obvious criticism of the excellent results presented would be that some concomitant pathological condition might have been corrected in the process of fixing the kidney, and to evaluate the position of nephropexy in uncomplicated nephroptosis it would be necessary to group these cases separately—a different form of dissection of the series. Dr. Edwards's next questions were, therefore: Was nephropexy the best treatment of symptomatic but uncomplicated nephroptosis? And, was it advantageous to combine denervation of the renal pedicle with it? Personally he still found some use for the abdominal support in uncomplicated cases, but he had not known it to succeed when the onset was abrupt, as after a fall or strenuous exertion.

In assessing results it should be pointed out that the group of patients in question consisted largely of middle-aged or elderly women who were prone to develop "cystic symptoms" (Dr. Silverton's phrase) due to extraurinary causes. Such symptoms were insufficient to establish a diagnosis of infection, and their post-operative persistence did not necessarily denote failure of the nephropexy.

Finally, Dr. Edwards mentioned a different aspect of the paper. The study of long-term results was a form of presentation rarely given by members. Anyone who personally attempted a survey of ten-year results without the assistance of trained staff or special equipment, undertook a time-consuming and discouraging assignment. Dr. Silverton had done well to get more than 50% replies to his first letter, and Dr. Edwards suspected that most of them came from private patients. In congratulating him on the gratifying results achieved, Dr. Edwards thanked him particularly for giving them the benefit of such a useful but onerous study.

#### Pelvi-Calyceal Changes.

JAMES S. PETERS (Melbourne) read a paper entitled "Pelvi-Calyceal Changes" (see page 930).

ALBAN GEE (Sydney) remarked that Dr. Peters had not mentioned external trauma as a cause of calyceal dilatation. He had had a woman patient with a past history of a ruptured kidney who presented with infected urine and recurrent attacks of pyelonephritis on that side. A retrograde pyelogram had revealed an irregular, shaggy dilated calyx which did not empty. There was no other abnormality present, and the condition was almost certainly the result of the previous trauma. The patient with a single dilated calyx was often a cause of great concern. Usually the upper calyx was dilated, and the urine was sterile. But the patient complained of pain in the area, which was usually a constant ache. The excretion urogram revealed a thin fine infundibulum at the base of this calyx. Dr. Gee asked what was the aetiology of this condition. Was it due to scarring, sphincteric spasm, or a congenital abnormality?

As an aid to diagnosing the origin of the pain, Dr. Gee placed great reliance on the pain reproduction test and the lack of emptying as seen in the pyelogram. The only successful treatment was amputation of the calyx. This was also the case when a hydrocalyx containing stone was encountered.

Conservative management as advocated by Dr. Peters could not be expected to prove successful while an imperfectly drained calyx remained. The use of a 20% sodium iodide solution as an opaque medium in retrograde pyelography was thought to be too irritating.

With regard to the case of the young adult with heavy haematuria and an unfilled calyx, Dr. Gee did not think that one could ever be justified in saying that an angioma was the probable cause, and that a conservative course should follow. He was interested to see that Dr. Peters had recently

had a case of papillary necrosis. He himself had removed a kidney recently for twice-proven haematuria, and received a pathological report to the effect that there was no urinary tract obstruction, nor was the patient a diabetic as was usually described.

#### Renal Cysts.

G. R. DAVIDSON (Ballarat) read a paper entitled "Renal Cysts" (see page 932).

#### Extensive Injury to the Penis.

PAUL HOPKINS (Mackay) read a paper entitled "Extensive Injury to the Penis" (see page 935).

#### Secondary Carcinoma of the Stomach Simulating a Distended Bladder.

PETER ROW (Brisbane) read a case report in which he described a secondary carcinoma of the stomach which simulated a distended bladder (see page 936).

#### Diverticulum of the Urethra Containing Stones.

ALBAN GEE (Sydney) reported a urethral diverticulum containing stones, in a female who had presented with haematuria and frequency of micturition. The diverticulum had been excised, and its lining mucosa had been reported as squamous in type. The origin was almost certainly from Gartner's duct. For the operation the patient was placed in the reversed lithotomy position, and this gave excellent exposure with better sense of touch to the surgeon who worked in a natural downwards direction. Dr. Gee had used this position twice recently and preferred it to the classical dorsal lithotomy position.

#### Urological Centres Overseas.

JAMES MORTENSEN (Melbourne) said that towards the end of 1954 he had had the privilege of visiting several urological centres in Great Britain. These included centres at Leeds, Glasgow, Liverpool, Sheffield and, of course, London. He thought that some of his impressions of the work of these clinics might be of interest to members.

**Adrenalectomy.**—Bilateral total adrenalectomy, Dr. Mortensen held, had an undoubted place in the treatment of advanced malignant disease of the breast and prostate—the hormone-dependent cancers. Unfortunately the results with carcinoma of the prostate as compared with those obtained with carcinoma of the breast were unpredictable, and there was a lower percentage of patients whose expectation of life was increased. It had always been noticeable in the literature on the subject that the unit of time chosen in assessing the post-operative survival period was often the month and not uncommonly the day. However, after adrenalectomy an occasional patient showed the maintenance of a dramatic improvement. Fergusson had a patient alive and well some two years after adrenalectomy for carcinoma of the prostate with advanced osseous secondary deposits and severe pain. The patient, previously bedridden, had returned to work, and as further evidence of his general state, he had recently been adjudged fit enough to undergo cholecystectomy for troublesome calculous cholecystitis.

It could be said, with fair certainty, that whatever else was achieved, pain would be relieved by adrenalectomy. In Fergusson's series of nineteen patients, fifteen showed marked improvement and there had been two post-operative deaths. Others had had the same experience.

Hanley wondered whether the operation was being withheld too long, for usually the patients were in a desperate state before being subjected to it. If it was accepted that the majority of patients treated by oestrogens *plus* or *minus* orchidectomy eventually became resistant to this type of treatment even though the resistance might be delayed five years or more, then there was a case for earlier adrenalectomy. However that might be, most delayed until resistance to oestrogens had occurred. It was, of course, important to detect such resistance at an early stage. Symptoms of returning bladder neck obstruction, advancement of detectable metastases and the appearance or reappearance of pain followed only after an uncertain latent period. In this regard the observations of Fergusson of changes in the alkaline phosphatase might prove valuable. Fergusson had noticed that the rise in the blood alkaline phosphatase level preceded clinical signs of resistance to oestrogens and preceded also any rise in the acid phosphatase. The level of alkaline phosphatase fell after adrenalectomy and subsequently rose again in the terminal stages. With regard to

technique, most urologists preferred a two-stage procedure, combining orchidectomy with the first stage if this had not already been done. An incision through the bed of the twelfth rib gave adequate exposure. In the early history of the operation difficulty was sometimes experienced in locating the gland in the perinephric fatty tissue. For this reason a peculiar dye substance, kynin green, was occasionally used. Injected intravenously, it had the astounding effect of colouring all body tissues, except the adrenal, a vivid green. However, familiarity with the area soon made it unnecessary, and, furthermore, anaesthetists strongly objected as it made the degree of oxygenation of the patient difficult to determine. There was no doubt that adrenalectomy was far from ideal, in fact it was frankly disappointing, but even its antagonists conceded that it was a step in the right direction, and when fully reviewed, as was being done, it would provide valuable information for the fuller understanding of cancer and therefore of its treatment.

**The Use of Ileum in Genito-Urinary Surgery.**—Dr. Mortensen said that much interest was being shown in the use of the isolated ileal loop in certain urological problems. Enlargement of the capacity of a grossly contracted bladder, irrespective of its aetiology, by ileo-cystoplasty produced relief of the disturbing frequency and probably delayed if not completely obviated the upper tract dilatation, provided such had not already commenced. Jacobs, of Glasgow, at a meeting of the Urological Section of the Royal Society of Medicine, had reported a case in which ileo-cystoplasty had been performed in the face of upper urinary tract dilatation—the dilatation had gradually progressed and urinary infection persisted. Jacobs suggested, therefore, either that back pressure should be considered a contraindication to the procedure or alternatively that transplantation of the ureters from the scarred bladder to the loop above should be performed at the same time. There were many types of anastomosis that could be performed between the ileum and the bladder. Two seemed to be most in favour—firstly, the side-to-side anastomosis with closure of the horns of the loop; secondly, that in which the loop was opened out by an incision along its length and sewn to the bladder as a flap. Chapman, of Glasgow, had used the latter method after partial cystectomy for bladder tumour. It enabled him to perform a more radical excision of the tumour-bearing area and its surrounds. The former method had been objected to by some on the grounds that in effect one was producing a diverticulum of the bladder, but this was not strictly so, and certainly the usual complications of a diverticulum were not evident. The loop emptied well and infection in five out of six cases was absent. A few flecks of mucus might be noticed in the urine.

Wells and Annis had transplanted ureters into the ileal loop with one end of the loop brought to the surface as an ileostomy and the other end closed. They preferred this to uretero-sigmoidostomy, believing that electrolyte disturbances were less frequent and that upper tract dilatation was reduced in incidence and severity. Certainly it was a reasonable procedure when anal sphincter control was absent for one reason or another. On one of the occasions Dr. Mortensen had seen Wells and Annis perform this type of anastomosis; it was in the course of a resection of a pelvic colon carcinoma which had involved one ureter.

Dr. Mortensen thought that it was also a very reasonable procedure to use a segment of ileum to replace a lost length of ureter but not an entire ureter. On one occasion Fergusson had been faced with a congenitally strictured ureter which appeared at operation to be nothing more than a fibrous cord running from the grossly hydronephrotic pelvis to the bladder. He excised this and replaced it with ileum. However, the hydronephrosis was not lessened, probably because micturition was accompanied by gross reflux of urine back into the loop.

**Carcinoma of the Prostate.**—Turning to carcinoma of the prostate, Dr. Mortensen said that Franks, of the Cancer Research Institute, had done some interesting work on the condition. He had serially sectioned 220 prostates obtained from elderly men who had come to post-mortem examination because of sudden unexplained death due to such conditions as coronary occlusion, cerebral haemorrhage *et cetera*. Previous workers had widely differed as to the incidence of carcinoma of the prostate in males over the age of fifty, the figures varying from 15% to 46%. One of these series—that of Baron and Angust—was worthy of comment. They examined single sections from 364 prostates and found 54 carcinomas, a percentage of 14.8. They then examined 50 glands, more carefully subjecting them to serial section. This time 22 carcinomas were found, an increase in incidence to 44%. Franks had found 69 carcinomas in his 220 glands. The age distribution was most illuminating. In

the sixth and seventh decades one-third of all glands showed carcinoma. In the eighth decade nearly half, in the ninth over three-quarters and in the tenth all glands examined showed evidence of carcinoma. The inescapable suggestion was that, given time, carcinoma of the prostate would be a finding.

Apart from local areas of malignant disease, lymphatic and vascular permeation was often found; in some cases the capsule had been quite clearly breached, and lymph node involvement was also found.

Not content with his own personal criteria of malignancy, Franks had his sections examined by other pathologists, including Cuthbert Dukes, and his diagnoses were substantially confirmed. Experimental pathologists were suggesting that in the growth of a tumour there were four phases: (i) Initiation, which required the presence and action of a specific carcinogen and in which a small proportion of cells were permanently altered. (ii) Promotion, in which the cells multiplied, but if the irritant stimulus was removed the tumour regressed. (iii) Critical size—when the tumour had reached a certain critical size it was self-perpetuating, providing its own stimulus to growth. (iv) The final stage of clinical tumour.

The clinical importance was that the property of metastasis and local invasion seemed to be present at a very early stage—at the stage of so-called latency. This work of Franks and others had set two problems of vital interest. Firstly, did all latent carcinomata finally become actively growing clinical carcinomata? Secondly, did all clinical carcinomata go through the latent stage?

**Hydronephrosis.**—A visit to Anderson's clinic at Sheffield had been interesting. Anderson's earlier enthusiasm for his operation for hydronephrosis secondary to pelvi-ureteric function block was undiminished. Dr. Mortensen said that he could only very briefly give a few points about Anderson's management of these cases.

In the pre-operative investigation Anderson was most reluctant to perform retrograde pyelography. If it should be necessary, a catheter was introduced only as far as the lower third of the ureter. The risks of infection and acute blockage of the hydronephrosis due to traumatic oedema were thereby lessened. No doubt all present were aware of the operative procedure Anderson adopted, so Dr. Mortensen would do no more than recount the emphasis he placed on the anterior approach—the avoidance of nephrostomy drainage, the avoidance of a circumferential suture line and the provision of dependent drainage from the pelvis to the ureter.

His results were most encouraging. As with other types of plastic procedure on the pelvis, radiological appearance did not necessarily parallel the clinical improvement. In some of the cases with which Dr. Mortensen had been associated, patients had been troubled in the immediate post-operative period by draughts of urine from the wound. In one instance drainage persisted for a fortnight. This was due to a defect in technique—Anderson took very small "bites" when he was suturing the ureter to the pelvis and saw fistulae very rarely. He was impressed with the number of patients who had returned after some years with symptoms and changes on the other side, and insisted that conservative surgery must be the aim in a condition that was potentially bilateral. He was interested at the moment in the familial occurrence of the hydronephroses. Dr. Mortensen had seen the excretion pyelograms of two families in which several members showed pelvi-ureteric junction block. Some blockages were causing symptoms, but there were others found on routine excretion pyelography which were quite silent.

**Calculus.**—Dr. Mortensen said that it had been a most stimulating experience to visit Pyrah's clinic at Leeds. He had left with the greatest admiration for Pyrah's energy and for the organization of the unit. It was an excellent example of the value that accrued from the integration of the work of several specialists devoting their energies to a common problem. Interested especially at the moment in the aetiology of urinary calculus and nephro-calcinosis, Pyrah had the full-time services of a pathologist, a biochemist and an honours science graduate in crystallography, as well as the enthusiastic support of the other ancillary services of the hospital, particularly the radiographic and photographic departments.

This research group met frequently during the week and all took part in round-table discussions on some facets of the problem of calculous disease. Of course, calculous disease was eminently suited for this type of approach—one, for instance, virtually required a knowledge of crystallography for the accurate analysis of stone, and the determination

by a biochemist of calcium balance—levels of calcium excretion in urine were similarly vital to the researcher. It seemed as though the time had come in medical research when the individual working on his own would contribute less and less to his understanding of problems and that it would be only by the combined efforts of workers in specialized fields that wastage of time and effort and the reduplication of work would be avoided.

**Bladder Tumours.**—Dr. Mortensen said that it had been his intention to relate some facts on bladder tumours that emerged from the Dublin meeting of the British Association of Urological Surgeons, but the current number of the *British Journal of Urology* dealt with it most fully. It would suffice to draw attention to certain details.

1. Chapman's work on the clinical course of bladder tumours was, he thought, most important. This knowledge of the clinical course of a disease and especially the effect it had on life expectation was essential if one was to interpret accurately Chapman's statistics that were produced as evidence for or against the efficacy of a certain line of treatment. From his reading Dr. Mortensen gathered that the ability to prognosticate was a much more highly developed sense in the clinician of a few generations back. Certainly in undergraduate teaching the clinical course of a disease tended to assume much less importance than did, for instance, the multiplicity of methods that had been used at some time or another as a form of treatment. In assessing the five-year cure rate in cancer, it was sometimes forgotten that a certain percentage of patients would have lived five years anyway.

2. The interpretation of results in the treatment of bladder tumours was made difficult by the lack of uniformity in the "staging" of tumours by the different clinics. Attempts were being made by the Institute of Urology to standardize the staging, and a Registry of Bladder Tumours was to be started.

The institute was also sponsoring research into the aetiology of these tumours. Their association with the excretion of colour dyes absorbed by industrial workers was, of course, old history, as was their occasional disappearance on diversion of the urine from the bladder. Working along these lines, it had been found that a substance  $\beta$  methylamine was a powerful carcinogen. It was distinguished by having an unconjugated hydroxyl radical. A chemically similar substance which was derived from the amino acid tryptophane was excreted in the urine in greater quantities in people with bladder carcinoma than in the normal population. The latter tended to excrete a conjugated form of the substance. A search for the appropriate enzymes that might cause conversion of the conjugated to carcinogenic unconjugated compound had shown that first those were present in significant amounts in the bladder mucosa of the tumour sufferer.

**Unrelated Topics.**—Dr. Mortensen said that he would conclude his talk by giving a few snippets of information on a few unrelated topics.

1. In the therapy of renal tuberculosis emphasis was still on the sanatorium regime—perhaps more so now that the place of streptomycin and other antituberculosis drugs had become more stabilized and it was realized that they could not be expected to achieve the impossible—as, for instance, to effect closure of a cavity. The scheme, suggested first, Dr. Mortensen thought, by Rossa and Gow and followed by Mimpriss, was streptomycin two grammes per day and INH (isonicotinic acid hydrazide) 250 milligrammes per day for fourteen days, and then PAS (para-aminosalicylic acid) five grammes three times a day and "Ethisone" 50 milligrammes three times a day for fourteen days. If a course was to be given, it was continued for a minimum of six to twelve weeks.

Because of the shortage of sanatorium beds it was sometimes necessary to discharge after several months a suitable patient who had tubercle-free urine. Then therapy was continued as an out-patient, when the patient received streptomycin 1.0 gramme twice a week, INH 100 milligrammes three times a day, and PAS 50 grammes twice a day.

It might be of some interest to members to know that at least one urological authority was of the opinion that retrograde prostatectomy was the worst open operation in surgery.

#### Election of Office Bearers.

The names of the office bearers of the Executive Council for the ensuing twelve months were announced as follows:

**President:** E. P. Row.

**Vice-President:** J. W. S. Laidley.

**Past President:** J. B. Somerset.

**Honorary Secretary:** L. D. Wheeler.

**Honorary Treasurer:** C. M. Edwards.

**Members:** K. L. H. Kirkland, A. H. Pearson, D. C. Trainor.

#### Induction of President and Past President's Address.

Dr. J. B. Somerset inducted Dr. E. P. Row the President for 1955-1956 and delivered the Past President's address.

#### PAEDIATRIC SOCIETY OF VICTORIA.

A MEETING of the Paediatric Society of Victoria was held at the Royal Children's Hospital, Melbourne, on Wednesday, July 13, 1955.

#### Insulin Zinc Suspension (Lente) for Diabetes Mellitus.

DR. T. MADDISON gave a report on a study of the use of the lente insulins in 20 diabetic children.

He said that this work, which had been reported in full elsewhere, was done at the Birmingham Children's Hospital in conjunction with Dr. Otto Wolff. They had used the lente insulin zinc suspension in 20 diabetic children for six to fourteen months. The preparation was developed by Hallas-Moller in Copenhagen, who used a 3:7 mixture of amorphous and crystalline insulin zinc suspension.

The diet system used was one in which the carbohydrate foods were accurately weighed and measured. In old cases, the transfer to lente insulin was made abruptly after the patient's admission to hospital. In new cases, soluble insulin was given for two or three days according to urine tests, and then the patients were changed to lente insulin when an estimate could be made of their requirements.

It was considered that good diabetic control should be achieved over the full twenty-four hours in order to minimize the vascular complications in adult life.

When the results of routine urine tests were blue or nearly so, blood sugar levels were estimated over a twenty-four-hour period. From those results it was usually possible to make minor adjustments in the diet and/or insulin in order to obtain normal blood sugar levels for the twenty-four hours.

As a guide to out-patient control the total sugar was estimated in a twenty-four-hour urine specimen which was collected by the child at home. It was felt that this gave valuable information, additional to that obtained by twice-daily urine testing. Dr. Maddison defined good control by stating that the child should be symptom-free and in good health while leading a normal life, should gain weight normally, and should pass less than 10 grammes of sugar in twenty-four hours. He showed a table which gave the blood sugar levels and the total urinary sugar excretion in these cases. He discussed the reasons for failing to effect control in two out of the 20 cases.

Dr. Maddison mentioned that the lente insulin suspension had an even hypoglycaemic action and issued the warning that it could give very low blood sugar levels without producing clinical hypoglycaemic symptoms. They had noticed no allergic reactions. It was felt that lente insulin with proper distribution of the carbohydrate during the day could control diabetes mellitus in the majority of children affected.

DR. GERALDINE AMIES opened the discussion and referred to results obtained in the Royal Children's Hospital. She reported on her series of 67 children between the ages of two and fourteen years, who had been continuously receiving these insulins at the diabetic clinic of the hospital. Some had been treated with them since October, 1953. She had found that the fixed proportion of semilente (30%) and ultralente (70%) insulins in the lente insulin had not been entirely satisfactory in juvenile diabetics, particularly in the adolescents who required a larger proportion of ultralente insulin in the twenty-four hours.

In order to facilitate the home training of both parents and child in the correct use of these insulins, she now had eliminated the lente type and used only the semilente and ultralente types in extraneous mixtures. In her clinic she used twenty-four-hour urinary excretion estimations only

when the children had permanent low renal thresholds or when the specimens could be accurately collected, as at the annual Diabetic Children's Camps, but their use had been found impracticable as an out-patient measure.

Frequent blood sugar estimations, such as Dr. Maddison used, would be helpful, but Dr. Amies thought that the insulin requirement could be accurately followed by blood sugar estimations at intervals of four, eight and twenty-four hours (twice) after injection.

In her group, weighing and measuring of the whole diet was advocated, as she considered the average Australian child's diet was freer, even in proteins and fats, than that of his English counterpart. Diet education and control she thought the most important single factors in the juvenile diabetic regime.

The parents also gave her good reports, in the majority of the cases, of improved psychological status at home, following transfer on to these insulins.

Hypoglycaemic reactions did occur and, in labile children, probably oftener than reports in the medical literature would indicate. She thought that the control of juvenile diabetes had been better with the insulin zinc suspensions than had been seen with any other insulins so far available.

Dr. H. WILLIAMS asked Dr. Maddison what measures he took, when using the lente insulins, if the child developed an acute infection.

Dr. Maddison said that management was indicated along the same lines as with soluble insulin. With minor infections the usual dose was maintained, but more soluble carbohydrates were used. If the infection was severe, one usually changed back to soluble insulin at that time.

Dr. P. TAFT complimented Dr. Maddison on the excellence of his results. He went on to say that each diabetic subject was a law unto himself or herself during the diabetic life; with the evolution of each new insulin there were a few subjects each time who could be more easily controlled with the new insulins. In adults he had used mostly the combined ultralente and semiletine insulins; but lente insulin was sometimes used as an index of what proportion the patient would need ultimately. In most cases the patient was better served by the use of the two combined. One did find, when transferring a patient from other insulins to lente insulin, that not infrequently a larger amount of lente insulin was required. The day of the perfect insulin was yet to come. The ideal, of course would be the injection of a type of insulin from which the blood sugar lowering factor would be slowly released in response to the normal stresses in the individual.

Dr. J. COLEBATCH asked whether the hypoglycaemic attacks were any different from those met with when regular insulin was used.

Dr. Maddison said that they were clinically exactly similar to those with ordinary insulin.

#### Use of the Machine for Treating Enuresis.

DR. H. N. B. WETTENHALL gave a preliminary report on a series of cases of enuresis in which the patients had been treated by him in private practice during the past two years. He said that it was impossible in the time available to discuss all aspects of the subject, and he would make no attempt to do so, but the main point he wished to make was that there was a place for the enuresis machine in the control of this very distressing complaint.

The series was composed of 23 cases of enuresis, the sex distribution of the patients being 18 males and five females. The age distribution was from four years to sixteen years, the average being ten years. Of the 23 patients, two were being currently treated with the machine, two were cured with medicine, three had gained no benefit, and 16 were regarded as being cured by the use of the machine. The details of the results would be discussed later. Dr. Wettenhall said that the method of approach to a particular patient was important. A full history and examination should always be made to exclude any physical cause and to allow a proper assessment of the factors involved. Cases of enuresis as they presented to the physician might be divided into three groups. In the first there was an organic condition which required correction—for example, urinary tract infection. In the second group, psychological disturbance was gross, and enuresis was only one of a number of symptoms indicating emotional disturbance. There was, however, he believed, a third group in which the symptom of enuresis was paramount and any other symptoms present were minor and often only a sequel of the enuresis. In such cases the children might be described as having a persistent infantile bladder—they failed to be awakened from sleep by

the sensation of bladder fullness, and the bladder then emptied itself automatically as normally occurred in infancy. It was this third group of children who would respond to treatment with the enuresis machine. For success to occur it was essential to have the cooperation of the child and also of his parents. The child must want to get better himself, and that rarely occurred under the age of six or seven years. Actually, most of the children treated had been older than this, though it might be possible to treat younger children. Children who were mentally retarded and unaware of what they were doing had also been excluded. It was essential to have the cooperation of the parents, and that could be obtained only by having a full discussion with both father and mother concerning the factors involved, the results one hoped to achieve and the details of the method to be used. A proper liaison between doctor, parents and child was a most important part of proper management. Dr. Wettenhall thought the medicinal therapy should always be tried before using the machine, a combination of ephedrine and belladonna being the drugs found most useful by him; but if there was not marked improvement within one month, then it was better to stop medicines and use the machine. Encouraging the child to hold on during the day without running to the lavatory the moment he wished to micturate might be used as a method to help him exert voluntary control over bladder sensation, when he was able to do so. Marking a calendar when he had dry nights and possibly giving him small rewards when he was dry for several nights in succession were also details of management which might help. Punishments, restriction of fluids during the day and raising the foot of the bed on blocks had no place in treatment. Waking the child during the night to pass his urine often did more harm than good; because if he was not fully awake, and often he was not, he was being trained to pass his urine in his sleep. That was certainly true of older children, though it might not apply with the two or three year old when nocturnal enuresis was within the limits of normal. To maintain the interest of both child and parents, regular visits to the doctor at approximately monthly intervals formed an integral and essential part of the treatment. A spirit of optimism and encouragement was undoubtedly a help.

The criteria for use of the machine might therefore be summarized in the following way: the child wanted to get better himself, other methods had failed, there was no gross psychological disturbance, and there was a good liaison between doctor, child and parents.

Dr. Wettenhall said that other workers had used the enuresis machine with children who had had severe psychological disturbance, and had had some success, but he had personally regarded any child with considerable disturbance as unsuitable for the machine.

When the machine was handed over, it was important to have both parents present as well as the child. It provided an opportunity to assess the whole family relationship; and when all understood the aim of treatment, then success was more likely to be achieved. The explanation of the purpose of the machine was given in the following terms: At night the child was unaware of bladder sensation; so that his bladder emptied when he was asleep, and only in the morning or some time later did he wake to find he was in a wet bed. With the machine he would be woken at the time of emptying, thus aiming to bring bladder sensation into consciousness. This was achieved with a variety of stimuli, a buzzer, a light and a mild electric shock, the strength of which could be varied.

A machine was shown to the audience at this stage and the details of its mechanism were explained, as they would be to the parents and child.

Dr. Wettenhall went on to say that the child might wake several times a night when the machine was first used, and there might be some initial difficulty in understanding its mechanism, but within a week that was almost always overcome. A detailed record of exactly what did occur each night should be kept, as this helped the family to see how progress was occurring and saved much diffuse talking when next the doctor was visited. Close supervision by the doctor might be regarded as a form of psychological treatment, and there was undoubtedly an element of this in successful management, but with the machine treatment frequently succeeded where previously there had been only failure.

When did treatment with the machine cease? That should occur when the child had been dry for ten to fourteen nights in succession. It did not matter whether the child slept right through the night or not, so long as he woke spontaneously to pass urine; for when that occurred, bladder sensation was reaching consciousness, which was after all

the aim of treatment. Sometimes the child would say "I know I am better now" even before he had had ten to fourteen nights dry in succession, and it was then reasonable to let him try without the machine. He might not succeed, but no harm was done provided he was told that doing without the machine was only a trial and he was not to be too upset if he did not succeed at the first time. It was surprising, however, how often he did succeed.

A more detailed analysis was then given of the results obtained with 23 patients. The sex distribution showed a considerable preponderance of males, as had been found in other series of cases of enuresis. The average age of the patients was higher than in many series, but all the children had received treatment previously by other doctors and were seen only after failure of other methods. That probably accounted for the fact that only one child was cured by medicinal therapy without recourse to the machine. Many younger children, treated for the first time with medicine, responded well and remained cured, and the child referred to was a little girl only four years old. The other child initially recorded as cured was a boy of twelve years who had since relapsed. Despite the results quoted, however, all children with enuresis should first be given a trial of medicinal therapy, if only to help to establish a good relationship between doctor and child. When the treatment failed was the time to use the machine, and in the present series 16 children had been cured with the aid of the machine. When one considered that all these children had previously failed to respond to a variety of other forms of therapy, there seemed to be sufficient justification to say that there was a very definite place for the machine in the treatment of enuresis. The state of the sixteen children had been checked again within the last week or two, and all still remained dry. Two children were currently being treated with the machine, and had been included in the series only to provide more figures for determining sex and age relationships; they would not be further discussed. Three cases were regarded as failures. In all of these there had been lack of parental cooperation; though it was probably hardly fair to say that that was the sole cause of failure, it was undoubtedly an important factor. In one, the parents left the boy to his own devices without any help from them for a considerable portion of the time. In the second the male attachment was never applied but left lying in the bed. In the third, the parents, despite numerous requests, did not return to see the doctor for nearly six months, and then only did so to bring back the machine, saying that it had failed.

There had been two relapses; both the patients were now included in the sixteen patients regarded as cured. One was a girl, aged six years when first treated, who relapsed about nine months later. She was then treated again with the machine, and after being wet for one night had been dry ever since (over twelve months). The other patient was a girl, aged thirteen years, who had been asked to leave two boarding schools because of enuresis. She took twenty weeks to become dry when first treated with the machine, relapsed nearly a year later, and then promptly became dry again when the machine was used. She was now established at a boarding school where there was a machine which she could apply if she needed it, and which thus provided her with a mental prop for her ability to remain dry. It was admittedly arguable that this situation was not ideal; but as her home was well out in the country, she would not be at school at all if she were not at a boarding school.

The time taken for cure had averaged eight weeks, with two exceptions to be discussed shortly. The length of time the machine had been kept had ranged from five to twelve weeks. This time covered the period from the day the machine was handed to the family to the day it was given back and thus included at least ten to fourteen days when the child had already been completely dry.

The two exceptions had been in two children at boarding school, one being the girl already discussed. The other was a boy, aged twelve years, who took eighteen weeks to become dry, and, as there was some psychological disturbance in his case, might yet relapse; so far he had remained dry for three months. It should, perhaps, be noted that two other children at boarding school had responded as quickly as the general average and remained dry.

It might be asked how many patients seen in the past two years had been excluded from this series. They numbered five; two were children aged less than five years, who might be reviewed when they were older; two were boys, both aged nine years, who showed considerable psychological disturbance and had been referred for psychiatric treatment; one was a woman, aged twenty-four years, who had developed enuresis at the age of seventeen years, and

obviously did not fulfil the criteria laid down. There were also three children, seen for the first time only in the last few weeks, who might later be considered suitable for treatment with the machine, but were not yet fully assessed.

In summing up, Dr. Wettenhall said that a series of 23 cases of enuresis had been discussed, with particular emphasis on the place of a machine in the control of that condition. Details of management had been outlined. Sixteen patients had so far been cured, and it was felt that the value of this form of therapy in otherwise resistant cases had been established.

DR. MONA BLANCH said that she agreed broadly with Dr. Wettenhall's findings from her use of the machine. She had used the machine to try to stop enuresis in eleven patients only, three girls and eight boys, and would not refer to any other treatment in those children. Most of the patients were between eight and twelve years old, the eldest being thirteen years and the youngest four years. She had used one type of machine and had, especially at first, found frequent technical difficulties with the leads and connexions. However, of the 11 children treated, only five were completely cured, and three months had been the average time for cure. One boy was dry for fifteen months, but after a mild accident had relapsed. She wondered whether Dr. Wettenhall was sure that no more of his patients had relapsed.

Dr. Blanch had found that when the machine was used, the patient did not actually wet the bed before waking, and there was only a momentary damping. She thought that another type of apparatus was better, with less technical difficulties, but realized its possible danger, as it was plugged into the main.

DR. J. WILLIAMS said that he thought the subject was an important one and that enuresis was a serious problem in the community, both for the parents and the child. It was a big handicap to successful adaptation. He had tried to use the machine in only two cases, and said he felt strongly that in all cases psychological factors were present and were of importance. He could not understand how the machine worked, and could not see the reason along any lines of conditioning. It had apparently been stated that the wet somatic discomfort was the inhibitory stimulus which at the onset of micturition caused a conditioned response tending to inhibit the detrusor mechanism and contract the sphincter; but that seemed doubtful, because he (Dr. Williams) after careful observation had seen no signs of discomfort whatsoever. Also, even if the shock reinforced the discomfort of a wet bed, how could that be a conditioning factor if the child was already wet?

Dr. Williams distrusted the use of the machine because he did not think that any method introducing elements of pain, shock or rude awakening of any kind was good. He did not know what it was that caused the child to control the bladder throughout the night, but did not think that it was anything to do with training by the parent. Training often caused more harm than good, and continence was largely a process of maturation; when arrived at it was a sign that the management of the child had been free from any emotional stress, and that things had gone along the normal pattern. If wetting still occurred, there had been some emotional stress, and he did not think this should be added to with the use of the machine. On the other hand, if one could be sure that symptomatic treatment without causing any harm to the child did cause the cessation of enuresis, in later years, from perhaps seven years onwards, it might be used.

Dr. Williams did not agree with Dr. Wettenhall when he said that psychological treatment alone would not cure enuresis. He thought that if one could make an attempt at adjustment of the emotional life of the child, then one could do a lot to help. He felt he might be biased by seeing only that type of case. So often when one obtained a history of the child's being dry and then it started wetting again, another child had arrived in the family. In the child's demand for attention this was a sign of regression to baby ways of behaviour.

DR. E. G. ROBERTSON said that he had been asked to suggest an explanation of the abolition of nocturnal enuresis which the machines might produce. In doing so he said that he would like to refer to a theory of the physiology of normal micturition propounded by Denny Brown and himself (*Brain*, 1933, 59:149 and 397). Observations were made after the insertion of two catheters, one inside the other, the relative position of the tips allowing of any two of the following: filling the bladder, recording of vesical pressure and recording the opening and closing of the external sphincter. As the bladder filled, the intravesical pressure at

first increased, slowly and steadily, as adaptation of length of muscle fibre to contained volume occurred. Small fluctuations of pressure appeared as the volume increased. At first those escaped conscious attention and quickly subsided; but, as the contained volume increased, the fluctuations increased in amplitude and complexity, until a sensory component entered consciousness, there being interpreted as desire for micturition. That led to conscious control, with contraction of the pelvic diaphragm (of which the external sphincter was a part). That was followed by a slow subsidence of vesical pressure. The process was repeated until the individual decided to allow micturition to occur. The pelvic diaphragm then relaxed, the vesical pressure mounted to a much higher level than before, the internal sphincter (in inevitable reciprocal relationship to the state of contraction of the vesical musculature) relaxed, and the bladder emptied. If, during micturition, the individual decided to stop the flow, the pelvic diaphragm and external sphincter contracted abruptly, and that was followed after a brief interval by a gradual fall of vesical pressure.

Dr. Robertson said that the reciprocal relationship between vesical musculature and internal sphincter was maintained in lesions of the *cauda equina* and the spinal cord, the reflex response to distension being much better coordinated when the arcs through the sacral segments of the cord were intact. Micturition in patients with transections of the spinal cord above the sacral region had the same form (although occurring at a small volume) as that which occurred when the normal person "willed" micturition. Thus, the lower reflex arcs appeared to be under inhibitory cerebral control. The cortical connexions also mediated desire for micturition as the vesical contractions produced sensations exceeding a threshold value. When, in response, the individual allowed micturition to occur, the inhibitory control was relaxed, and stretch of the bladder wall produced contraction of the viscera through the lower reflex arcs. Thus, it would seem that the bladder was not directly stimulated to contract by the cortex, but was allowed to respond to stretch of its wall by removal of control. In the early stages the control occurred without awareness of the bladder, the mind becoming aware of the bladder only in preparation for emptying. The bladder was, as it were, on the fringe of consciousness, and the mechanism of control was easily influenced by psychological factors. Variations in control under different circumstances were within each individual's experience. The inability of some to micturate in the presence of others was an example. When the mind was fully occupied, the threshold to vesical sensation appeared to be raised; so that insistent desires for micturition might disappear, while control proceeded unconsciously.

It was found experimentally that normal subjects possessed very different powers of restraining micturition. One subject was able to suppress coordinated vesical contractions when the contained volume was large; another was unable to do so with a much smaller volume. It seemed reasonable to suggest that inhibitory control was variably developed in normal individuals. It was but a short step to suggesting that some, at least, of the sufferers from nocturnal enuresis were at the poor end of a long scale of control, and the association of diurnal precipitancy would seem to offer confirmation.

In nocturnal enuresis, micturition occurred before vesical sensation awakened the patient. That might perhaps be due to unusually deep sleep, but more probably cortical inhibition at unconscious and conscious levels was poor. The pelvic diaphragm and external sphincters remained relaxed, and vesical contractions reached full uninhibited development. That did not awaken the subject—nor did the wet bed—suggesting that sleep was indeed deep; but it was not an important factor, since many deep sleepers did not suffer.

When the machine led to cure, it undoubtedly acted by improving inhibitory control. At first it awakened the sleeper, who then contracted the external sphincter of voluntary muscle, producing immediate cessation of outflow and, with short latency, subsidence of vesical contraction. In the next stage of improvement, the subject awakened before micturition began; and then when that was established, the machine could be discarded. The patient was apparently made conscious of the vesical contractions which heralded detrusor activity; so that he awakened earlier, controlling micturition until he allowed it to proceed in a satisfactory place. It seemed reasonable to suggest that his mind reached back in the continuum of time in order to forestall the disturbing effects of the machine. Thus, to avoid the unpleasant electric shock and noise, the sleeper was awakened by the vesical sensations which preceded them. When the machine produced noise alone, the explanation was less tenable—perhaps it was merely that some

extraneous influence was needed to increase control in somewhat the same way as conversion hysteria could be relieved by strong encouragement. In the last stages of the best cures the patient slept through the night without awakening. Perhaps getting out of bed was so unpleasant that inhibitory control was reinforced. It was in such a mechanism—with variable degrees of control from individual to individual, and in the same individual subject to physiological and psychological factors, in which a variable sensory threshold was involved—that undue precipitancy and nocturnal enuresis might occur, and such factors as those suggested might lead to improved control.

The failures encountered might therefore include not only those cases in which there was a psychological reason for enuresis which the patient was unwilling to relinquish, cases of nocturnal epilepsy when the bladder was full (in some cases major and minor attacks might have passed unnoticed) *et cetera*, but also those at the bad end of the inhibitory scale. In the best of those, inhibitory exercises during the day, and especially when practised in the security of the lavatory and during the flow itself, might well be tried as an adjuvant.

Finally, it might be suggested that the reputed success of the old Scottish cure of applying a suitable peg before sleep could be similarly explained.

DR. S. WILLIAMS said that there was one type of apparatus which could be obtained for use by the patient without any help from a doctor. There was also surely a danger in that apparatus, which was plugged into the main, and he wondered if any measures should be taken to prevent the use of the machine in that way.

DR. R. WEIGALL said that he had had a bias against the machine ever since it was introduced. He thought that a lot of the children had a disturbed psychological background, and a shock such as the machine supplied in the middle of the night only added to the disturbance. Also it did not convey its message until the damage was done. Once urine entered the urethra, other reflexes of an irresistible nature were set up. He wondered whether the machine did anything more than give the child a bad night and less deep sleep. He thought that the condition could be approached on more common-sense lines. By the use of firm, hard mattresses, less bedclothes *et cetera*, the child could be made to sleep less heavily. Start-and-stop exercises were valuable, and fitted in with the reflexes of the bladder explained by Dr. Robertson. A child could be taught to start and stop about six times during the act of micturition.

DR. D. HAGEN said that he was grateful to Dr. Robertson for giving some sort of explanation of how the machine could work, as that had been a mystery to him. He thought that quite a large proportion of enuretic children were normal psychologically, and he wondered whether Dr. J. Williams saw only a particular group. He could not detect anything wrong psychologically in two out of three cases. The more psychological disturbance there was, however, the less effective the machine would be, and he did not use it if he thought there was any degree of this disturbance. In almost all other cases the machine had been effective, and in his hands cure had been obtained in four weeks. Two patients had relapsed.

DR. M. POWELL said that if most subjects were psychologically abnormal, he wondered why the female and male ratio was so divergent. He thought Dr. Robertson had given the explanation that there was considerable difference in any individual's ability to control the emptying reflex. He thought that psychological effects were *post hoc* except in a very small number of patients including backward children, and that night-wetters and day-wetters were two different classes.

The problem to him seemed an entirely physical one, and he thought that the machine introduced a conditioned reflex; so that the child knew subconsciously that when it passed urine, something slightly unpleasant would happen, and so it woke up. He thought that the machine had come to stay.

DR. J. COLEBATCH quoted two of his cases in which the machine had been unsuccessful owing to fright on the part of the children. He said that the machine did not produce 100% of cures; and that if one studied the history of the treatment of enuresis, it was rather staggering to see the number of treatments that had been used, and claimed to be successful in a large number of cases. The surgical treatment ranged from operations on the trigone and upper end of the urethra, repeated dilatation and circumcision to tonsillectomy. All those had one thing in common with the machine. There was some sort of shock involved. Numerous drugs had always been used, but controlled experiments had never shown any outstanding success for them. The results

mentioned at the meeting were not much better than those claimed for other methods. It seemed that the machine might cure patients who did not respond to other methods and vice versa. One must keep an open mind about its place, but at least the meeting might stimulate further study of the condition.

DR. W. RICKARDS referred to the word "cure", especially as it was used in regard to the "synthetic" cures mentioned. He said that the enuresis might be cured, but other symptoms unmasked, as had occurred in a case which he had met with recently. The enuresis had ceased, but asthma began. He went on to say that there were many kinds of enuresis, and it was important to remember that fact in considering the results of treatment. Dr. Robertson had hinted at various somatic factors, and to any psychiatrist it was obvious that there were many psychological factors, as in the retarded child, the backward child, the one who needed affection, the one who sought revenge, and many others. In any study of the disease the cases should be carefully analysed, criteria for assessment laid down and then a project planned and carried out. Otherwise they would just continue to add to Dr. Colebatch's multitude of methods for curing the disease. He concluded by quoting one study of 183 cases in which only 14 were mono-symptomatic, the others showing various behavioural disturbances.

DR. JULIE JONES quoted the results of using the machine on patients at the Observatory Clinic. She said that most of the children with enuresis seen at the clinic were very disturbed children, and in at least half of the cases the family constellation was inadequate. Enuresis always occurred in association with other symptoms. The machine had been used in seven cases in ten months with disappointing results in the six boys. The one girl was the only one to be cured. However, all the children were disturbed, and the parents had their own problems in every case except one. There was a history of bed-wetting in four of the parents. Dr. Jones felt that in this type of child one was unlikely to get good results from the use of the machine.

DR. WETTENHALL, in summing up the discussion on this subject, said that of course one must regard enuresis as a symptom only. He agreed that there were cases in which gross psychological disturbance was present, and in which there was organic cause, and for that reason a full history and examination were necessary. He thought that that was a strong reason why the non-medical control of the symptom should be checked. He said that he had deliberately stated that his report was a preliminary one, as many of the patients had been followed for less than a year, and there might be further relapses later. However, all the children had received many other treatments without success, and with careful assessment and use of the machine they had been improved. He thanked Dr. Robertson for his explanation of the physiological and neurological background for the control of micturition. He thought that it was true that the machine caused bladder sensation to be brought into consciousness. The shock was, however, a minimal disturbance. He felt that in general the machine did have a place in the treatment of enuresis.

## Dut of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

### THE RUM HOSPITAL.<sup>1</sup>

[From the diary of Joseph Arnold, M.D., F.L.S., July 13, 1815.]

The great Colonial Hospital more resembling a magnificent villa than an hospital was built by levying a duty of 7/- a gallon on spirits and allowing no person to purchase but from monopolisers who sometimes brought it at 7/- a gallon and sold it at 8/- a pint. This hospital which consists of a body and 2 detached wings has a magnificent appearance outside, there being a fine veranda at the upper storey

<sup>1</sup> From the original in the Mitchell Library, Sydney.

supported by round stone pillars quite round the building, the roof resting on similar but smaller pillars of wood. One of the wings was intended solely for the first surgeon, who certainly would have been most magnificently lodged, but for the Supreme Judge, who has procured two rooms as an office to be taken off it. The other wing is for the 2 assistant surgeons. It is furnished with kitchens, stables, coachhouses etc. and I am sure could not be decently furnished under two thousand pounds and what an assistant surgeon who can scarcely afford more than two chairs and tables is to do with such large magnificent apartments I cannot tell. The main building as I said before is very large consisting of 8 wards each of which I suppose is 60 feet long: four of the wards are given up to the 2 judges, each of whom has a court and a deliberating room. The other four wards are for patients. It appears however to me that nothing can be worse contrived than this building, it perhaps might make a good barrack but certainly must be a very bad hospital—four large wards and nothing else. Every hospital should be provided with water closets but here is nothing of the kind except a detached building behind the hospital.

Every hospital should have rooms adjoining for the nurses and attendants, who must always be within call, and for noisy patients, but here are nothing but four large wards.

Every hospital should have a plentiful supply of water but here is only a well and it appears to me that all the filth that is thrown out of the building must remain and contaminate the air for want of sewers and water to convey it away. On the whole as an hospital it certainly is a most preposterous building.

## Special Correspondence.

### NEW ZEALAND LETTER.

BY OUR SPECIAL REPRESENTATIVE.

### Medical Research in Auckland.

THE Auckland Division of the British Empire Cancer Campaign Society recently appealed for £50,000 to buy a supervoltage therapy unit for Auckland Hospital, and collected £130,000. The balance is largely to be used for research, and a project is planned involving the search for chemical substances having a bearing on cancer, particularly as possible agents in treatment. The organic chemistry department of Auckland University College has had experience of this work in relation to native flora under Professor Briggs, and is to carry out the task. Also planned are extensions of tissue culture and other techniques to do with screening these and other compounds under Dr. J. F. Burton, of the pathology department at Auckland Hospital, who is visiting the United Kingdom and the United States of America at the present time.

Other projects have been supported by the New Zealand Medical Research Council: a full-time one in obstetrics under Professor H. M. Carey, of the Post-Graduate Unit at the National Women's Hospital, and lesser ones in biochemistry (Dr. Sims), in haematology (Dr. Staveley) and in cardiac surgery.

The Auckland Medical Research Foundation has recently been launched by Mr. John Grierson, Chairman of the Auckland Hospital Board, with the Board, Auckland University College and a number of prominent citizens as foundation members. Warm public support has been given by the Press. At the present stage the collection of money is the chief object. No doubt, applications for grants-in-aid will be forthcoming in the near future.

## Correspondence.

### OBSERVATIONS UPON 250 CASES OF BLEEDING PEPTIC ULCER.

SIR: Dr. W. K. Manning's "Observations Upon 250 Cases of Bleeding Peptic Ulcer" in THE MEDICAL JOURNAL OF AUSTRALIA, November 12, 1955, is a very thought-provoking and pertinent contribution to this vital realistic problem. The following criticisms are offered with a view to clarifying some of the points raised in the article.

Dr. Manning states: "There is no general agreement even upon the basic principles to be followed in the management of a bleeding peptic ulcer." I submit, however that there are some basic principles upon which a great many physicians and surgeons agree in the treatment of these patients: (i) That medical treatment should be instituted in all cases and suffice in the majority (approximately 90%). (ii) That the remaining cases (approximately 10%) are those which fail to stop bleeding and will bleed to death unless this is controlled by surgery.

It is a pity that the 250 cases referred to in the article were under the sole initial care of one man—a physician. I say this in no disrespect (some of my best friends are physicians!), as Dr. Manning has achieved maximal success—full results by medical treatment alone. My point is that both a physician and a surgeon should see all cases early; so that those patients who fail to stop bleeding can be diagnosed early, and given the benefit of relatively early surgery. Surgeons should no longer be handed the "failed medical cases" to treat; the mortality of such a selection is too high and surgical treatment is then apt to fall into disrespect.

Dr. Manning has difficulty in selecting the cases requiring surgery; we all have. But he does not mention the one aid which will help him segregate early those patients still bleeding. I refer to the use of an indwelling Ryle's or Rehfuss tube in the stomach. The danger of such a tube causing bleeding to restart has been shown to be negligible; while the value to be obtained is immeasurable. The aspiration of fresh blood shows that bleeding is active and continuous, before any general signs of shock or blood loss are manifest. Dr. Manning has rightly pointed out that vomiting of blood may be delayed many hours after the actual occurrence of free bleeding, and that we should not wait until the signs of shock are present before diagnosing free bleeding.

I agree with Dr. Manning that large amounts of fluid given rapidly by the intravenous route can often do great harm in these patients. The crux of the problem is not to rapidly raise the haemoglobin level by large blood transfusions, but to detect early those cases which fail to stop bleeding, and to check this bleeding by surgery.

As a surgeon, I would not be content, as Dr. Manning appears to be, with accepting the low mortality rate of bleeding peptic ulcer (up to 10%) of all cases treated medically. By early and carefully selective surgery, many of those patients who would otherwise bleed to death can be saved. I do not wish to go into the surgical details here, but the ideal surgical treatment for the majority of the patients selected for surgery is a partial gastrectomy.

Yours, etc.,

GERALD BROSNAH.

55 Collins Street,  
Melbourne,  
November 15, 1955.

#### ADRENALECTOMY IN METASTATIC BREAST CANCER: A REPORT OF SIX CASES.

SIR: I have read with interest Mr. W. E. A. Hughes-Jones's report, as published in your journal of November 5, 1955, of six cases subjected to bilateral adrenalectomy and oophorectomy for metastatic carcinoma of the breast. Mr. Hughes-Jones, on the results of six cases, one of whom was an immediate post-operative death, has formed the sweeping conclusion that: "Removal of the adrenals and ovaries in six cases of metastases of breast cancer has not had any apparent effect on the course of the particular life history of the disease of each patient."

Of the five cases for evaluation, to me it seems that two have done reasonably well. A brief analysis shows:

CASE I.—This patient was in an advanced stage of generalized carcinomatosis and was obviously so near to death that I do not think the adrenalectomy made any difference to her condition.

CASE II.—With bilateral pulmonary metastases and metastases in the cervical spine, lived for six months after oophorectomy and adrenalectomy, but Mr. Hughes-Jones gives no details of improvement in breathlessness or general health during that time.

CASE III.—Died forty-eight hours after operation; therefore was not available for subsequent assessment.

CASE IV.—With collapse of the cervical spine and quadriplegia got immediate relief from her pain after adrenalectomy.

This was attributed to the application of a plaster. In my experience, splinting of a carcinomatous spine does not give relief from pain.

CASE V.—With extensive skeletal metastases, was relieved of pain two months after adrenalectomy in April, 1954. This patient's skeleton has sclerosed, she is alive in April, 1955, working hard and playing tennis. I do not think this result could have been achieved without adrenalectomy.

CASE VI.—With skeletal metastases and bilateral pulmonary metastases, is alive and well five months after adrenalectomy, looks well, has no cachexia and is free from pain. This surprising improvement Mr. Hughes-Jones attributes to the effect of testosterone administered first in 1950 and again (by implant) in 1953. The life of an implant is roughly four months, and in clinics abroad the improvement obtained by testosterone has been shown to be limited from seven to twelve months.

Of the five cases, excluding the post-operative death, two are alive and well to date with freedom from pain.

Sir Stanford Cade, during his recent visit to Australia, stressed the fact that adrenalectomy gave immediate and lasting relief from the pain of skeletal metastases, and for that reason alone the operation was worth while.

Charles Huggins and Bergenstahl, of Chicago, in a series of more than 400 cases have had marked improvement in 40% of their cases—the 40% of breast carcinomas which are hormonally dependent.

In my series of 30 cases, the results of which are to be published shortly, I have had a much happier experience than Mr. Hughes-Jones. Two examples of marked benefit are:

1. Radical mastectomy, November, 1953, extensive skeletal metastases, January, 1954, oophorectomy and adrenalectomy completed by May, 1954, by which time her third lumbar vertebra had collapsed. In November, 1955, the patient is alive and well, doing all her work, and has had a hiking holiday with her husband this year.

2. Left temporal lobe metastasis in woman of forty-seven, severe and uncontrollable headache, visual disturbances, lack of concentration and inability to complete a sentence, paralysis of the right arm with severe pain. This patient had oophorectomy and adrenalectomy in December, 1954. She has no headache, speech is normal, she is free from pain, has resumed her household duties with the care of six children and recently wrote me a grateful letter, using her right hand.

While I continue to get results comparable to these two cases, I shall continue to offer the chance of similar improvement to cases of carcinoma of the breast with metastases. I know of no other treatment except hypophysectomy, still in the experimental stage, which can offer these patients freedom from pain, a sense of well-being, enjoyment of food and life itself and a possible though not proven extension of life.

Yours, etc.,

141 Macquarie Street,  
Sydney,  
November 16, 1955.

KATHLEEN CUNNINGHAM.

#### Obituary.

ERASMUS ALGERNON ROBERT BLIGH.

DR. ERASMUS ALGERNON ROBERT BLIGH, whose death was announced in these columns earlier in this year, was for many years closely identified with the medical practice of North Sydney. He attained the status of surgeon on the honorary staff of the Royal North Shore Hospital of Sydney, but he did not relinquish his general practice, holding that a general practitioner who paid serious attention to surgery was best qualified to meet the patient's needs.

Erasmus Bligh was born at Bega in New South Wales in 1879, and was the son of Richard Roger Bligh. He went to Saint Andrew's Cathedral Choir School, but left at the age of fourteen years to work for a drug company. Here he secured the services of a coach and passed his matriculation examination at the age of nineteen years. He studied for one year in the Faculty of Arts at the University of Sydney and then for one year acted as headmaster of Faulconbridge College on the Blue Mountains. He was twenty-one years of age when he became a medical student and he graduated

Bachelor of Medicine and Master of Surgery in 1905. He became a resident medical officer at Sydney Hospital, where he was affectionately known as "Nellie", for which he had to blame the nursery rhyme. After that he spent a year at the Children's Hospital, Glebe—it was then in its early formative period and had not graduated to its present site as the Royal Alexandra Hospital for Children. It will be remembered by seniors chiefly because of the work there of the late C. P. B. Clubbe. From there he went to the North Shore Hospital (it had not then become "Royal") as pathologist and started practice at Greenwich. He did his rounds on a white horse which rejoiced in the strange name of Chutney; his children used to wash and blue the horse once a week. At this stage of his career someone asked the matron of the hospital where Dr. Bligh lived. She said: "Oh! he lives here, but I don't know where he sleeps." His early association with the hospital was maintained until his death. He joined the surgical side of the staff and was an active member from 1907 until 1938 when he joined the consulting staff. His colleagues describe him as a sound and

tised intense agriculture. He was a reserved man and few men seemed to have known him intimately; those who did break through the barrier of reserve found a man who was always courteous and full of the milk of human kindness. He is survived by his widow, two daughters and three sons.

#### JAMES ADRIAN LAWSON.

DR. H. T. ILLINGWORTH has sent the following appreciation of the late Dr. James Adrian Lawson.

The occasion of the death of J. A. Lawson, of Auburn, New South Wales, should not pass without a tribute being paid to the many years of conscientious labour and service rendered to the residents of Auburn and surrounding suburbs by this hard-working generous soul.

In the years while I was associated with him on the honorary staff of the Auburn District Hospital, where he was chairman of our medical executive committee, he was acknowledged by all the other honorary medical officers to be a most hard-working, sincere and honourable practitioner. His passing will leave the district with a loss which will indeed be hard to fill.

To his sister, who was his devoted assistant for many years, and to the rest of his family should be expressed the appreciation of the profession for the way in which his gifts were so freely given during his long years of practice and for many thoughtful professional acts unselfishly performed over the years.

#### CHARLES REGINALD PALMER.

DR. F. K. BARTLETT writes of Dr. Charles Reginald Palmer, whose death was announced a few weeks ago.

The son of a former Chief Secretary and grandson of the first *Hansard* writer to the New South Wales Legislature, Charles Palmer travelled daily by train from Lawson to Sydney High School—as did his brothers—and then to the University of Sydney, where he graduated M.B., Ch.M. in 1906. His brothers, between them, embraced the original professions (church, law, medicine) except the eldest, who carried on the family's tradition of Civil Service.

Resident at Sydney Hospital, Charles Palmer met Dr. George Bell, with whom he started a lifelong friendship. Then he journeyed west to Kalgoorlie and later to the north coast of New South Wales. Finally he settled in the south coast of New South Wales, where in 1910 he bought an old practice and an old house on a side street in Woonona. It was two years before "Cottesloe" (the name in Western Australia which had impressed him happily) was built, and he could, as so well expressed by Samuel Walter Foss:

"... live in my house by the side of the road,  
And be a friend to man."

Every evening the hollow-backed pony used to be harnessed to the sulky—ready for that emergency call—until 1915, when Palmer heeded another call and enlisted in the Australian Army Medical Corps with the rank of captain. Invalided home in 1918 with the rank of major, he worked days and nights to help curb the deadly pneumonic influenza epidemic. When asked later how he and all his household escaped the virus, when all around were smitten, he would scratch the back of one hand gently with the fingers of the other, smile, and say: "I didn't let the patients breathe on me, Doc."

At this time he was given three appointments—Honorary Repatriation Medical Officer, Government Medical Officer, and Commonwealth Medical Referee, which he held for the district of Bulli until his retirement early in 1955. He then carried out the onerous duties of contract practice, dispensing his own medicines accurately till the depression years (1929 to 1935). Over these lean years he did, in addition, a great amount of charitable work in the district. In this he was assisted by good neighbours—Dr. Harry Lee (now in his fifty-third year of general practice in Wollongong) and Dr. Bob Goldie, Dr. Cecil Roper and Dr. Francis Crossley (all since deceased). As was once said of Sir William Osler: "He was the servant of his fellow practitioners and of his patients. To each he always brought a message of hope and encouragement. If you wished to see him at his best—you watched him at the bedside of some poor old soul with a chronic or helpless malady."



safe surgeon; he became a Fellow of the Royal Australasian College of Surgeons in 1928. After he had been a year or two at Greenwich he bought the late Dr. Bernard Newmarch's practice; Newmarch had a large surgical practice on the north side of the harbour.

For some years Bligh represented the medical staff on the board of the hospital. He acted for a period as honorary secretary of the Warringah Medical Association and was honorary physician to the Red Cross Society, having charge of the patients at Graithwaite and the Lady Gowrie Home. He was made a life member of the Red Cross Society in September, 1947, after twenty-five years' service.

In one sense Bligh was something of a pioneer. Before the erection of the Sydney Harbour bridge he tried to create in North Sydney a medical centre where specialists of various kinds might have their consulting rooms and patients would not have to make the journey across the harbour when they needed special advice. In this he was partly successful, but when the bridge was completed developments of the kind planned by him ceased. It is remarkable that now when the city has grown so enormously and the bridge is almost unable to cope with the traffic, the business centres of the city are expanding onto the northern side. There is every likelihood that a specialist medical centre will before long come into being with the business expansion; in other words, Bligh's ideas will see their fruition.

Bligh's great hobby was gardening. He acquired grazing interests in Queensland, and in one of his properties prac-

The local Women's First Aid classes were established by him in 1930, as was the Ladies' Home Nursing Service. He always took active interest in the Crippled Children's Association, the Boy Scout movement, the Parents and Citizens' Association of Wollongong High School, and the Police and Citizens' Boys' Club (Bulli). Appointed surgeon of the Saint John Brigade, he held this appointment from 1928 till his death. In 1938 he was appointed Serving Brother and the following year an Officer of the Order of St. John of Jerusalem. During World War II he formed and controlled the first-aid posts at Bulli and Woonona, and with Mrs. Palmer's help billeted on most generous terms two English boys till it was safe for them to return to England.

I did not join Charles Palmer in medical practice until 1946—at "Cottesloe", Bulli. I found a man, loved by a few, appreciated by many, known and respected by all. How skilfully he treated those at the extremes of age! How wisely he advised! How safely he gave anaesthesia! (He is thought to have given 20,000 general anaesthetics over fifty years without fatality.) I was present when a new



wing of Bulli District Hospital was named Palmer House in appreciation of his services and devotion to that institution. In all he served 45 years as honorary medical officer to Bulli District Hospital. Early in 1955, before 800 people in the Royal Theatre, Bulli, Sir Earle Page presented him with a citation and a gold wristlet watch and a wallet of notes. The last-named apparently embarrassed him, because he automatically handed it to Mrs. Palmer who was seated next to him—a homely gesture appreciated by all in the audience. Dr. John Hunter spoke well of "C.R.P.", as did leaders of all the various bodies with which he had been actively associated. (At the same time Mrs. Palmer was given a unique china wall plate and a basket of flowers.)

Apart from his life's work of service to the community, exemplified in later years by the active part he played in the affairs of Bulli Rotary Club, Palmer had three dominant interests—God, garden and family. He was for many years an elder of the Presbyterian Church; in the words of a lifelong friend, the Reverend W. Harrison: "Dr. Palmer was a good man, in the full Biblical meaning of the word. Also he was a kindly man, a sincere man and a fine physician." Always an early riser, he spent the first few hours of the day, unless he was needed elsewhere, in the extensive garden. Gardening is a love inherited by every member of his family.

He is survived by his widow and a family of five—Dr. Edward Palmer, of Forbes, Dr. Alexander Palmer, pathologist, of Sydney Hospital, two daughters who are members of the nursing profession, and a son who is a fifth year medical student.

Charles Palmer could have boasted, had he been a boastful man, that his immediate family had given not 20, but almost 200 years of service to the medical and nursing professions.

DR. BERTRAND A. COOK writes: I first met the late Charles Palmer in June, 1938, when I succeeded to the practice of the late Francis Clements Crossie, Palmer being the other practitioner then at Bulli, and I worked with him in friendly rivalry, but, also, in helpful cooperation and harmony, until his retirement in March, 1955.

Palmer was the embodiment of all that we regard as best in the fast-disappearing type known as the "family doctor". He was well equipped to handle the multifarious duties of a general practitioner. He was a sound physician, a capable surgeon (though it fell to my lot to do a good deal of his surgery, as he was handicapped by a chronic eczema of the hands), and an outstandingly good obstetrician. Indeed, in those days obstetrics in this district was done at a great disadvantage, on account of the primitive nursing service then available, so different from the wonderfully efficient modern obstetric block, now for some years in operation here, and which aptly bears his name. Nonetheless, I never saw a mother come to grief at his hands, whatever the difficulty encountered. In days before psychosomatic medicine came to be seriously regarded, he was already applying the knowledge he had of the stresses and strains of family life in remedying its somatized symptoms in his patients. His Christianity was practical. He followed up the praise of the Lord on the Sabbath, a duty he meticulously carried out, by applying charity in the many poor homes he visited on week-days, and in the less prosperous days before the Welfare State took a hand, he found numerous avenues for this activity. Latterly, he welcomed the National Health Act for the opportunity it afforded the poor to obtain the best that therapeutics afforded, but he was most particular in the application of these benefits, in not squandering recklessly expensive drugs, which the taxpayer had to buy. In this respect, as in many other ways, he was an exemplar for all doctors to follow. I never knew of him doing an unethical thing, nor would I think he was capable of a mean or dishonest act. All too few of his kind are in our ranks, and I mourn the loss of a loyal comrade and sincere friend.

#### FRANK HOWARD BEARE.

We have received from DR. R. L. THOROLD GRANT the following appreciation of the late Dr. Frank Howard Beare.

In 1906 a sailing ship, *The C.J.S.*, arrived in Australia from Mauritius with a cargo of sugar and carrying amongst her passengers a small boy, Frank Howard Beare, who was duly deposited as a boarder at Queen's School, North Adelaide.

Frank Beare was born in Mauritius on January 20, 1895, the eldest son of Mr. and Mrs. Charles Alston Beare. Mr. Beare was the manager of a sugar business in Mauritius, but there were family links with South Australia; his grandfather came to Adelaide in 1836 in the *Duke of York* to assist in the formation of the South Australian Company. Mrs. Charles Beare also had links with South Australia; she was a Miss Howard and had and still has many relations in that State. Sir Thomas Hudson Beare, Regius Professor of Engineering in the University of Edinburgh, was Frank Beare's great-uncle.

So to Adelaide came Frank Howard Beare, and he was in due course to make his mark in the world and become a leading member of the community. Queen's School suited young Beare, and he suited Queen's School; he quietly took his place in that collection of young people, and in due course became a leader in the school both at work and at play. A junior master there at that time, R. G. Jennings, known to generations of Geelong Grammar School boys, implanted in him a love of cricket and an ability to play the game well. This love of cricket stayed with him all his life.

He matriculated brilliantly and decided to study medicine, for which purpose he entered the University of Adelaide in 1912. A new regulation at that time compelled the passing of the first year's B.Sc. course in certain subjects. This was followed by five years of the medical course, shortened by eliminating holidays because of war needs, and he obtained his degree of bachelor of medicine and bachelor of surgery in 1917 with honours. He immediately went into camp and then proceeded overseas to Egypt and France with the rank of captain attached to a field ambulance of the first Australian Imperial Force. After the armistice he stayed for a year in England, working in hospital as a

resident medical officer. He next returned to South Australia in 1920 and for some months worked as a house surgeon at the Adelaide Hospital. In 1921 he conducted research in conjunction with Professor J. B. Cleland on gastro-enteritis in infants and children, and he was awarded his M.D. (Adelaide) for a thesis on this subject.

In 1922 he started in general practice, succeeding Dr. F. H. Makin at Mile End, a suburb of Adelaide. In 1923 he married Beatrice, daughter of Mr. E. J. Field, who was Director of Lands for South Australia. Always a hard worker, he made a success of his practice; and when the need arose for assistance, he was joined in partnership by Dr. Esmond F. West, who subsequently became one of the earlier orthopaedic surgeons.

In 1930 he left his general practice and went to England for post-graduate study, obtaining in 1931 the Diploma of Membership of the Royal College of Physicians of London and in 1932 the Diploma in Psychological Medicine. He subsequently was elected a Foundation Fellow of The Royal Australasian College of Physicians. He returned to Adelaide



in 1932 and started practice as a physician with a leaning towards neurology. In 1923 he had been appointed honorary assistant physician to the Adelaide Hospital; he subsequently became honorary physician in 1941 and continued as such until his retirement in January, 1955, when he was appointed as honorary consultant physician.

He acted as medical officer of health for Walkerville from 1932 until his death. He was honorary medical officer to Mareeba Babies' Hospital from 1926 to 1935. He had occupied the office of President of the Royal British Nurses' Association.

He retained his interest in military affairs after the first World War, and at the outbreak of the second World War he had the rank of lieutenant-colonel in the Militia. He was promoted to the rank of colonel as Deputy Director of Medical Services at Keswick, and after a few months reverted to that of lieutenant-colonel to join the second Australian Imperial Force. The year 1940 found him at Woodside Camp, where he trained the Second/Sixth Field Ambulance. His idea of training was to do always with the men under his command what he expected them to do. Those who served under him have told me how he followed this precept. The ambulance left for the Middle East in December, 1940. On arrival he was promoted to the rank of colonel and lent to the British Army; he was sent to

Amiriya in the desert. Many changes in his appointments were made at this time. Eventually he was appointed Assistant Director of Medical Services of the Sixth Division. He sailed with this division for Australia and arrived back in 1942.

Almost at once he was sent to Darwin and appointed Assistant Director of Medical Services, Northern Territory. Next he was appointed Deputy Director of Medical Services at Keswick, Adelaide, for about six months, and then went to Queensland as Assistant Director of Medical Services of the Seventh Division, going with them to New Guinea in 1943. After service there he was made commanding officer of the Second/Second Australian General Hospital and stayed there until demobilized. For services in New Guinea he was created a Commander of the Most Excellent Order of the British Empire (military division). He also wore the Efficiency Decoration.

He returned to civil life and resumed practice as a physician, working until a few days before his death. He was a lecturer in clinical medicine for the University of Adelaide, and he also acted as an examiner. He had been a Freemason for some years; I was not aware of this until after his death.

So much for a short outline of his professional career. What of the man himself? He was known to his friends as "Teddy" Bear. This name had not been applied in his earlier days, as the teddy bear had not become a popular toy at that time. It was a singularly appropriate nickname, because he was not unlike a koala bear in appearance. I had known him intimately for nearly fifty years; we had many arguments and disagreements, but good friendship should be able to stand the test of that, and it did. He was a loyal and true friend. He was a trifle hot-tempered as beffited his colouring; he was quick to recover his composure, and he bore no malice. He was a man of strong principles, and he upheld tenaciously that which he believed to be right and proper. This attribute did not always endear him to those who happened to be in higher office than he.

Stories about him there are in plenty. My favourite one must suffice. "Teddy" was fond of fishing and would at times visit Kangaroo Island on holiday to pursue this sport. On one occasion a musical dignitary and his wife were also there on holiday. Mrs. Musician became ill. No local doctor was available. In the kindness of his heart Teddy called, dressed in his fishing clothes (which had to be seen to be believed), and prescribed for the sick one. After the consultation the husband rebuked him for his mode of dress when making a professional call. Teddy turned purple and said: "And did you remember to bring your —— banjo?"

He was a good physician and an excellent clinical teacher for students. His ward rounds were a source of joy to students, who appreciated his apt and light-hearted quips at appropriate moments. They also appreciated him as a man.

He was singularly happy in his domestic life. His wife understood this complex character as no other person could have. He worshipped her. There are three sons, of whom he was proud, though he would never admit it. His second boy is a doctor, and the youngest is a medical student.

I went to see him in hospital shortly before he died. The old red head had greyed; he turned to me and shook hands and told me he was finished; he then asked for his wife. On October 9, 1955, the boy from Mauritius set sail for Home.

## Post-Graduate Work.

### THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

#### Course in Advanced Medicine.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that a course in advanced medicine suitable for candidates for the examination for membership of The Royal Australasian College of Physicians will be held for a period of twelve weeks from January 16 to April 7, 1956. The programme has been arranged to take place in the afternoons from Monday to Friday and on Saturday mornings.

It is desirable that candidates should have had considerable experience in clinical work either in hospital or medical practice before considering themselves prepared to take examinations for higher medical degrees or diplomas. The

course will be found of value to practitioners intending to devote further time to acquiring such experience before taking the examination and to those not seeking higher qualifications, but who are anxious to widen their knowledge of internal medicine. The scope of the course includes special instruction in electrocardiography, ward rounds and demonstrations of cases at the principal metropolitan hospitals, regular clinico-pathological conferences, lecture demonstrations in haematology and in the application of radiological methods of diagnosis to medical diseases, tutorials in case-taking, and lecture demonstrations in psychiatry and neurological cases. The supervisor of the course will conduct tutorials on selected subjects and will be available to discuss with students any problems arising in the course. It is expected that students will devote considerable time to reading of text-books and current medical literature.

Fees for attendance are £31 10s., payable in advance at enrolment date, and early application is desirable. Enrolment can be made for the whole or portions of the course. Applications should be sent to the Course Secretary, The Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney. Telephones: BU 4497-8. Telegraphic address: "Postgrad, Sydney."

## Royal Australasian College of Surgeons.

### FACULTY OF ANAESTHETISTS.

#### Final Fellowship Examination.

A MEETING of the Court of Examiners for the final examination for Fellowship of the Faculty of Anaesthetists of the Royal Australasian College of Surgeons will be held in Melbourne beginning on Friday, May 4, 1956. Candidates who desire to present themselves at this examination should apply, on the prescribed form, to the assessor for permission to do so before March 22, 1956. The appropriate forms are available from the Secretary of the Faculty, c/o Royal Australasian College of Surgeons, Spring Street, Melbourne,

C.1. It is emphasized that entries close on March 22, 1956, and that late entries cannot be accepted. The examination fee is £21 plus exchange on cheques drawn on banks outside Melbourne and must be paid to the Secretary by March 22, 1956.

The subjects for the final examination are: (a) anaesthesia and analgesia, including pre-operative and post-operative care; (b) medicine and surgery; (c) the application of the basic sciences, including chemistry and physics, to the specialty of anaesthetics. The examination in each case is partly written, partly oral and partly clinical (including the examination of patients).

Graduates of an approved medical school who have obtained, prior to December 31, 1957, the first part of the diploma in anaesthetics of an approved medical school or college may, at the discretion of the Board, be allowed to proceed to the final examination of the Faculty provided they have fulfilled all other regulations.

## Naval, Military and Air Force.

### APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 58, of November 10, 1955.

#### AUSTRALIAN MILITARY FORCES.

##### Australian Regular Army.

###### Royal Australian Army Medical Corps.

The regimental seniority and service for purposes of promotion of 3/40123 Captain (Temporary Major) A. P. Hanway is prescribed as effective from 1st October, 1949.

To be Major (provisionally), 1st October, 1955.—3/40123 Captain (Temporary Major) A. P. Hanway.

### DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED NOVEMBER 12, 1955.<sup>1</sup>

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism ..	7(4)	1(1)	3	3	2(2) 1(1)	..	..	..	16 1
Amoebiasis ..	..	..	..	..	..	..	..	..	..
Ancylostomiasis ..	..	..	..	..	..	..	..	..	..
Anthrax ..	..	..	..	..	..	..	..	..	..
Bilharziasis ..	..	..	..	..	..	..	..	..	..
Brucellosis ..	..	..	..	..	..	..	..	..	..
Cholera ..	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus) ..	1(1)	..	..	..	..	..	..	..	1
Dengue ..	..	..	..	..	..	..	..	..	..
Diarrhoea (Infantile) ..	1(1)	14(14)	7(6)	..	..	..	..	..	22
Diphtheria ..	2(1)	..	1(1)	1(1)	6(6)	..	..	..	10
Dysentery (Bacillary) ..	..	..	4(4)	3(3)	..	..	..	..	7
Encephalitis ..	1	2(1)	..	..	..	..	..	..	3
Filariasis ..	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice ..	..	..	..	..	..	..	..	..	..
Hydatid ..	..	..	..	..	..	..	..	..	..
Infective Hepatitis ..	57(25)	107(40)	..	7(2)	11(7)	..	..	1	183
Lead Poisoning ..	..	..	..	..	1	..	..	..	1
Leprosy ..	..	..	..	..	2(1)	..	1	..	3
Leptospirosis ..	..	..	1	..	..	..	..	..	1
Malaria ..	..	..	..	2(1)	..	..	..	..	3
Meningococcal Infection ..	3(1)	8(3)	..	..	..	1	..	..	7
Ophthalmia ..	..	..	..	..	..	..	..	..	..
Granthisis ..	..	..	..	..	..	..	..	..	..
Paratyphoid ..	..	..	..	..	..	..	..	..	..
Plague ..	..	..	..	..	..	..	..	..	..
Poliomyelitis ..	1(1)	8(1)	1	2(1)	2(1)	..	1	..	10
Puerperal Fever ..	..	1(1)	..	..	..	..	..	..	..
Rubella ..	..	114(90)	..	18(13)	3(3)	..	..	..	135
Salmonella Infection ..	..	..	..	1(1)	1(1)	..	..	..	2
Scarlet Fever ..	17(10)	19(13)	14(6)	8(2)	2(2)	1(1)	..	..	56
Smallpox ..	..	..	..	..	..	..	..	..	1
Tetanus ..	..	1(1)	..	..	..	..	..	..	..
Trachoma ..	..	..	..	..	16(1)	..	..	..	168
Trichinosis ..	..	..	..	..	..	..	..	..	..
Tuberculosis ..	54(16)	25(18)	8(1)	4(4)	10(10)	1	..	1	98
Typhoid Fever ..	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne) ..	..	..	..	..	1(1)	..	..	..	1
Typhus (Louse-borne) ..	..	..	..	..	..	..	..	..	..
Yellow Fever ..	..	..	..	..	..	..	..	..	..

<sup>1</sup> Figures in parentheses are those for the metropolitan area.

The Short Service Commission granted to 2/40110 Major D. C. Cook is extended until 26th October, 1955.

#### Citizen Military Forces.

##### Eastern Command.

*Royal Australian Army Medical Corps (Medical).*—The provisional appointment of 2/67299 Captain P. A. Stanton-Cook is terminated, 30th September, 1955. To be Captains (provisionally): 2/62339 Brian Robert Hanley, 4th February, 1955 (in lieu of the notification respecting this officer which appeared in Executive Minute No. 157 of 1955, promulgated in *Commonwealth Gazette* No. 41 of 1955), and 2/67299 Peter Alan Stanton-Cook, 1st October, 1955.

##### Southern Command.

*Royal Australian Army Medical Corps (Medical).*—4/32050 Honorary Captain R. A. Westerman is appointed from the Reserve of Officers, and to be Captain (provisionally), 14th September, 1955.

#### Reserve Citizen Military Forces.

##### Royal Australian Army Medical Corps.

*Eastern Command.*—The resignation of Honorary Captain K. S. Cranney of his commission is accepted, 14th August, 1955.

## Australian Medical Board Proceedings.

### NEW SOUTH WALES.

THE following have been registered in accordance with the *Medical Practitioners Act*, 1928-1955, of New South Wales, as duly qualified medical practitioners: Meyers, Rodney Ian, M.B., B.S., 1950 (Univ. Queensland); Smith, Peter Moore, M.B., B.S., 1953 (Univ. Queensland); Stevenson, Robert King, M.B., B.S., 1945 (Univ. Melbourne); Evans, Evelyn Anne, M.B., B.S., 1950 (Univ. Melbourne); Doney, Agnes Allison Mackay, M.B., Ch.B., 1950 (Univ. Edinburgh); Elliot, John Scott, M.B., Ch.B., 1939 (Univ. Edinburgh); Hellowell, Samuel, M.B., B.S., 1953 (Univ. Durham), L.R.C.P., L.R.C.S., 1943 (Edinburgh), L.R.F.P.S., 1943 (Glasgow); Phillips, William John Elliott, M.R.C.S., 1936 (England), L.R.C.P., 1936 (London), M.B., B.Ch., 1937 (Univ. Cambridge), M.R.C.P., 1947 (London), M.R.A.C.P., 1949; Bryant, Peter Deryk, L.M.S.S.A., 1944 (London), M.B., B.S., 1948 (Univ. London), M.D., 1950 (Univ. London), M.R.C.P., 1952 (London); Hesselgrave-Jackson, Denis Michael, L.R.C.P., L.R.C.S., 1950 (Edinburgh), L.R.F.P.S., 1950 (Glasgow); Roller, Abraham, registered under the provisions of Section 17 (1) (c) of the *Medical Practitioners Act*, 1938-1955.

The following additional qualifications have been registered in accordance with the provisions of the *Medical Practitioners Act*, 1938-1955, of New South Wales: Shearman, Rodney Phillip, D.G.O., 1955 (Univ. Sydney); Vincent, George Kenneth, D.L.O., 1954 (London); Dan, Raymond Victor, D.M.R.D., R.C.P. and S., 1955; Toussaint, James Reginald de Vos, D.P.H., 1948 (Univ. Sydney).

The following additions and amendments have been made to the Register of Medical Practitioners for New South Wales in accordance with the *Medical Practitioners Act*, 1938-1955:

Registered medical practitioner who has complied with the requirements of Section 17 (3) and is registered under Section 17 (1) (a) of the Act: Coghlan, Charles Lloyd, M.B., B.S. (Melb.), 1939, D.L.O. (Melb.), 1948, F.R.A.C.S., 1951.

Registered medical practitioners who have complied with the requirements of Section 17 (3) and are registered under Section 17 (1) (b) of the Act: Simpson, George Anthony, M.B., B.S. (London), 1949.

Registered medical practitioner who is required to complete twelve months' hospital service in accordance with the provisions of Section 17 (3) and is registered under Section 17 (1) (a) of the Act: Szatmary Alexander, Ivan Gabriel, M.B., B.S. (Melb.), 1954.

The following additional qualifications have been registered: Manchester, Edward Gordon Haig, M.C.R.A., 1955; Colwell, Alan Rudford, F.C.R.A., 1946, D.R. (Syd.), 1947, F.F.R., 1954.

## Nominations and Elections.

THE undermentioned has applied for election as a member of the South Australian Branch of the British Medical Association:

Bowering, Douglas Charles, graduated June, 1954, Eudunda, South Australia.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association: Chapman, Gilbert Wesley, qualified June, 1955; Bowden, Maxwell George, qualified June, 1954; Meldrum, Brian Reginald, qualified December, 1952.

## Diary for the Month.

- DEC. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.  
 DEC. 7.—Western Australian Branch, B.M.A.: Branch Council.  
 DEC. 7.—Victorian Branch, B.M.A.: Branch Meeting.  
 DEC. 7.—Victorian Branch, B.M.A.: Branch Council.  
 DEC. 8.—New South Wales Branch, B.M.A.: Branch Meeting.  
 DEC. 9.—Tasmanian Branch, B.M.A.: Branch Council.  
 DEC. 12.—Victorian Branch, B.M.A.: Executive of Branch Council.  
 DEC. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.  
 DEC. 14.—Victorian Branch, B.M.A.: Branch Council.

## Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.I.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all contract practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

## Editorial Notices.

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